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Family Bathyclupeidae

Body elongate, compressed. Head moderate, with large mucous cavities, crown flattened. Snout short, conic. Eye large. Mouth oblique, superior. Premaxillaries long. Maxillary oblique, expanded, reaches little below front of eye. No barbels. Teeth villiform, in bands in jaws, also on vomer and palatines. Gill openings large. Gill rakers slender, moderate. Gill filaments short. Pseudobranchial large. Branchiostegals 7. Pneumatic duct to air bladder persistent. Scales cycloid, deciduous. Lateral line distinct, nearly straight, axial along side of body. Dorsal fin postmedian, inserted.

Alepocephalus blanfordi Alcock

Alepocephalus blanfordi Alcock, Ann.

Mag. Nat. Hist., series 6, vol. 10, 1892, p. 357.

Gulf of Manaar (N. Lat. $6^{\circ}58'$ E. Long.

$77^{\circ}26'50''$), in 902 fathoms; Illustrat.

Zool. Investigator, Fishes, pt. 4, 1892⁷, pl.

9, fig. 1; Journ. Asiatic Soc. Bengal,

vol. 65, pt. 2, 1896, p. 334 (Gulf of Manaar,

902 fathoms); Weber, Siboga Exped.,

vol. 57, Fische, 1913, p. 10 (Flores Sea, in

694 meters). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol.

2, 1913, p. 100 (Flores Sea).

at least behind anal origin. Anal long, with short, weak, slender spine anteriorly. Caudal small, forked. Pectoral large, reaches at least to front of anal. Ventral small, subangular, or before pectoral, with spine and 5 rays.

Marine carnivorous fishes, living in the deep waters of tropical seas, in depths of 261 to 754 meters. They are apparently with uncertain affinities: Following Weber they are here grouped with the berycoids.

~~Family Bathyclupeidae~~

Genus Bathyclupea Alcock

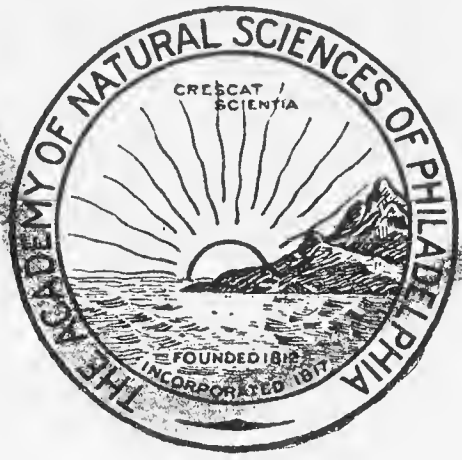
Bathyclupea Alcock, Ann. Mag.

Nat. Hist., series 6, vol. 8, 1891, p. 130.

(Type Bathyclupea hoskynii Alcock,
monotypic.)

Body well compressed, tapers
back into long tail to short
caudal peduncle. Head
compressed, mucous cavities
well developed. Snout compressed.
Eye high, close to upper profile,
median in head length. Mouth
cleft very oblique, lower jaw
prominent and protruding.
Teeth minute, inconspicuous.
Interorbital narrow. Gill
opening widely cleft, with very

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LOGAN SQUARE
PHILADELPHIA, PA.

narrow fold over narrow isthmus.
 Pyloric appendages in moderate
 number. Slight median
 postventral cutaneous keel
 present. Dorsal with 1 or 2 short,
 slender, weak spines. Anal but
 slightly higher anteriorly. Pectoral
 rays 26 to 29, upper longer. Ventral
 depressible in groove.

Analysis of species

- a.¹ Anal fin origin 1 or more times eye in advance of dorsal fin origin.
- b.¹ Head $2\frac{1}{2}$ to $2\frac{4}{5}$. megaceps.
- b.² Head 3 to $3\frac{1}{8}$. gracilis.
- a.² Anal fin origin $\frac{1}{2}$ to $\frac{3}{4}$ eye diameter before dorsal.
- c.¹ Dorsal origin about midway between eye center and caudal base; mouth subvertical.
- d.¹ Pectoral reaches $\frac{1}{2}$ in dorsal fin base; ventral inserted below hind part of eye. hoskyni.
- d.² Pectoral reaches $\frac{1}{4}$ in dorsal fin base; ventral inserted behind eye. malayana.
- c.² Dorsal origin much nearer caudal base than eye; mouth rather inclined; pectoral reaches second branched dorsal ray. argentea.

130 mm.

Philippines.

(Seale)

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Bathyclupea megaceps new species

Depth $3\frac{4}{5}$ to $4\frac{1}{4}$; head $2\frac{1}{2}$ to $2\frac{4}{5}$, width $2\frac{2}{5}$ to $2\frac{1}{2}$. Snout to orbit $3\frac{2}{3}$ to $3\frac{3}{4}$ in head from snout tip; orbit $2\frac{1}{2}$ to $2\frac{2}{3}$, greatly exceeds snout or interorbital; eye 3 to $3\frac{1}{5}$ in head; maxillary reaches $\frac{1}{8}$ to $\frac{1}{6}$ in orbit, length $2\frac{1}{4}$ to $2\frac{1}{2}$ in head from snout tip; teeth in villiform bands above with outer series uniformly and slightly enlarged; lower teeth single row of small, uniform, conic teeth; interorbital $5\frac{1}{4}$ to $5\frac{7}{8}$, low, nearly level. Gill rakers 3 + 13, lanceolate, 3 in orbit; gill filaments $\frac{4}{5}$ of gill rakers.

Scales 35 in lateral line to caudal base and 3 more on latter; 3 above, 9 below, 15 predorsal forward to occiput close behind hind eye edge. Scales very thin, caducous, most all fallen except few in lateral line.

D. I, 8, II; fin origin midway between hind eye edge or pupil and caudal base, first branched ray $2\frac{2}{5}$? to $2\frac{1}{2}$ in total head length; A. II, 26, III or II, 27, IV, fin origin midway between front end of

color continued across forehead brownish,
 opercle flap with brownish; end of
 premaxillary and mouth angle scarlet;
 inside mouth posterior and upper
 portions scarlet to brown, side
 variously crossed by dusky transverse
 bars. Fins all vinaceous red. Pectoral
 axil brown, also reddish blotch below
 axil.

mandible and caudal base, about $\frac{7}{8}$ to 1 diameter of orbit in advance of dorsal origin, first branched ray $2\frac{1}{2}?$ to $3\frac{3}{4}?$ in total head length; caudal (damaged) emarginate; least depth of caudal peduncle 4 to $4\frac{3}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral 5 to 6.

Brown generally, little paler below on under surfaces. Opercles and lower surface of head neutral black. Iris silvery white. Inside mouth and gill opening blackish brown. Fins all light brownish.

Philippines. Characterized by its very large head and orbital socket. Related to B. gracilis in its advanced anal fin origin, a feature in which it differs at once from B. malayana and B. hoskyni.

Depth $2\frac{4}{5}$ to 3; head $2\frac{3}{4}$ to $2\frac{7}{8}$,
width $2\frac{1}{4}$ to $2\frac{2}{5}$. Snout 2 to $2\frac{3}{4}$ in head;
eye 3 to 4, 1 to $1\frac{4}{5}$ in snout, greater
than interorbital in young to subequal
with age; maxillary reaches opposite
front nostril, length $2\frac{3}{4}$ to $3\frac{1}{4}$ in
head; band of villiform teeth in each
jaw and outer row of larger conic teeth,
4 slight canines anteriorly in each jaw
and 4 to 6 enlarged or semimolar teeth
each side posteriorly in each jaw;
interorbital $3\frac{7}{8}$ to 4, slightly convex.
Gill rakers 5+5, low tubercles.

Scales 42 or 43 in lateral line to
caudal base and 3 or 4 more on latter;
6 above, 15 below, 8 predorsal. Scales
with 14 to 16 basal radiating striae;
65 to 72 apical denticles, 7 or 8
^{transverse} rows of basal segments; circuli fine.

2962. D. 5538. Apo Island (C.), S. 64° W., 7.3 miles (9° 08' 15" N., 123° 23' 20" E.), between Negros and Siquijor. In 256 fathoms. August 19, 1909. Length 182 mm.

10154. D. 5507. Camp Overton Light, Iligan Bay (Mindanao), S. 1° E., 8.6 miles (8° 21' 12" N., 124° 12' 06" E.), northern Mindanao and vicinity. In 42.5 fathoms. August 4, 1909. Length 238? mm, caudal tips broken. Type, ^{no.} 93323 U.S.N.M.

1435. D. 5405. Ponson Island (N.), S. 86° E., 8.5 miles (10° 49' 20" N., 124° 24' 23" E.), Dupon Bay (Leyte) and vicinity. In 262 fathoms. March 17, 1909. Length 217 mm.

Romblon, Auguste, Balabac,
Zamboanga).

* Lethrinus univittatus (not Valenciennes)
Playfair, Proc. Zool. Soc. London, 1867, p.
853.

* Lethrinus variegatus (not Valenciennes)
Evermann and Seale, Bull. Bur. Fisher.,
vol. 26, 1906 (1907), p. 86 (San Fabian).

* Lethrinus miniatus (not Schneider)
Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 216 (Tahiti and Tempe specimens).

Bathyclupea gracilis new species

depth $3\frac{3}{4}$ to 4; head 3 to $3\frac{1}{8}$, width $2\frac{1}{8}$ to 3. Snout 3 to 4 in head from snout tip; eye $2\frac{3}{4}$ to 3, greater than snout in young to subequal with age, greater than interorbital; maxillary reaches to or $\frac{1}{5}$ in eye, expansion $1\frac{4}{5}$ to 2 in eye, length $2\frac{1}{4}$ to $2\frac{1}{3}$ in head from snout tip; interorbital $4\frac{1}{2}$ to $5\frac{1}{4}$, low, level. Gill rakers 2 + 13, lanceolate, 2 in eye; gill filaments $\frac{2}{5}$ of gill rakers; 4 more asperous rudimentary gill rakers above and 3 below.

Scales 35 or 36 in lateral line to caudal base and 3 more on latter; 3 above, 8 or 9 below, 14 or 15 predorsal forward opposite

The following represent the dark phase of this species. All are nearly uniform chocolate brown, except some pale spots on each side of the abdomen in alcoholic specimens mostly posteriorly.

8031. Capulaan Bay, Luzon. February 24, 1908. Length 254 mm.

8723. Caracaran, Batan Island. June 28, 1908. Length 318 mm.

6036. Little Santa Cruz Island. May 28, 1908. Length 305 mm.

8065. Mompoy Island. March 3, 1909. Length 250 mm.

7975. Pagapas Bay. February 20, 1908. Length 263 mm.

5747. Point Capunuy-pugan, General Island, east coast Mindanao. May 10, 1908. Length 278 mm.

5293. Romblon Harbor, Romblon. March 25, 1908. Length 223 mm. Back light

hind eye edge. Scales caducous, very thin, most all fallen. Scales with 78 to 80 complete circuli.

D. I, 8, I or I, 9, I, fin origin 1 to $1\frac{3}{5}$ times eye behind anal origin, first ray $1\frac{3}{4}$ to 2 in total head length; A. II, 23, I to II, 26, I, first branched ray $2\frac{2}{5}$ to 3; caudal $1\frac{1}{2}$ to $1\frac{3}{4}$, forked; least depth of caudal peduncle $3\frac{1}{5}$ to $3\frac{4}{5}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{6}$, rays I, 26; ventral I, 5, fin 3 to $5\frac{1}{8}$ in total head.

Brown, with silvery to gray tints below. Iris silvery white. Lower side of head silvery white. Fins pale uniform brownish white. Inside gill opening blackish.

14414. Jalise Island. November 9,
1909. Length 95 mm.

A 1399. Sampatana Island.
December 21, 1909. Length 240 mm.

A 1605. Naha, Riu Kiu Islands.
February 7, 1910. Length 358 mm.

56202 U.S.N.M.

Bureau of Fisheries (No. 4169). Length 257 mm.

75896 U.S.N.M. Borneo. H. C. Raven.

Length 153 mm.

75897 U.S.N.M. Borneo. H. C. Raven.

Length 246 mm.

52800 A.N.S.P. Calapan, Mindoro. Rev.
Joseph Clemens. 1923. Length 142 mm.

Differs from Bathyclupea
megacephalus in its shorter and
smaller head, though with dorsal
in similar position. The eye,
while larger ^{than usual} & smaller than in
B. megacephalus.

1145. West coast Palani Island.
November 18, 1908. Length 280 mm.

6087. Zamboanga market. May 29,
1908. Length 312 mm.

21327. Elki, Boero Island, Dutch
East Indies. December 9, 1907. Length 98 mm.

20839. Tenuke Island. December 11,
1909. Length 97 mm.

13510, 19792. Gomonno Island, Pitt
Passage. December 3, 1909. Length 117 to 140 mm.

17694. Limbe Strait, Celebes. November 10,
1909. Length 143 mm.

A906. Limbe Strait, Celebes. November 11,
1909. Length 430 mm. Few scattered black
spots, little less than pupil, on sides
of body.

A1040. North of Malibagu Point, Celebes.
November 21, 1909. Length 203 mm.

9723. Kayou Island. November 29, 1909.
Length 135 mm.

4157. D. 5651. Bugumbali Point, S. 67° E., 21 miles (4° 43' 50" S., 121° 23' 24" E.), Gulf of Boni, Celebes. In 700 fathoms. December 17, 1909. Length 250 mm. Type no. 93320 U.S.N.M.

2367. D. 5508. Camp Overton Light, Dligan Bay, S. 6° E., 4.9 miles (8° 17' 24" N., long. 124° 11' 42"), northern Mindanao and vicinity. In 270 fathoms. August 5, 1909. Length 143 mm.

2316. D. 5402. Capitanillo Light, S. 37° W., 16.1 miles (11° 11' 45" N., 124° 15' 45" E.), between Leyte and Cebu. In 188 fathoms. March 16, 1909. Length 137 mm.

China Sea, vicinity of Hong Kong, 2423, 2425. D. 5301. Lat. 20° 37' N., long. 115° 43' E. In 208 fathoms. August 8, 1909. Length 166 to 179 mm.

3295. D. 5625. Kayoa Island (SE.), S. 3°W., 6 miles (0° 07' 00" N., 127° 28' 00" E.), between Gillolo and Kayoa Islands. In 230 fathoms. November 29, 1909. Length 202 mm.

2595. D. 5501. Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (8° 37' 37" N., 124° 35' E.), northern Mindanao and vicinity. In 214 fathoms. August 4, 1909. Length 138 mm.

2589, 2590, 3154 to 3157. D. 5503. Macabalan Point Light (Mindanao), S. 31° E., 6.6 miles (8° 36' 26" N., 124° 36' 08" E.), northern Mindanao and vicinity. In 226 fathoms. August 4, 1909. Length 121 to 153 mm.

2440 to 2443. D. 5504. Macabalan Point Light (Mindanao), S. 39° E., 6 miles (8° 35' 30" N., 124° 36' E.), northern Mindanao and vicinity. In 200 fathoms. August 5, 1909. Length 132 to 148 mm.

1826¹⁹⁹⁰,₁₁ D. 5222. San Andreas Island (W.), S. 57° E., 9.20 miles (13° 38' 30" N., 121° 42' 45" E.), between Marinduque and Luzon. In 195 fathoms. April 24, 1908. Length 126 to 130 mm.

2992. D. 5374. Jayabas Light (outer), N. 9° E., 7.4 miles (13° 46' 45" N., 121° 35' 08" E.), Marinduque Island and vicinity. In 190 fathoms. March 2, 1909. Length 162 mm.

Bathyclupea hoskynii Alcock

Bathyclupea hoskynii Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 8, p. 131, fig. 4, 1891 (type locality, Lat. $11^{\circ} 31' 40''$ N., Long. $92^{\circ} 46' 40''$ E., 188 to 220 fathoms, Andaman Sea). —

Goode and Bean, Oceanic Ichth., p. 190, 1895 (reference). — Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, p. 334, 1896 (Andaman Sea; off Madras coast, 145 to 250 fathoms); Cat. Deep Sea Fishes Indian Mus., p. 40, 1899 (Andaman Sea, 185 to 419 fathoms; off Madras). — Illustrat. Zool. Investigator, Fishes, pt. 7, pl. 28, fig. 2, 1900.

— Sarman, Mem. Mus. Comp. Zool., vol. 24, p. 384, 1899 (reference). — Alcock,

depth $3\frac{1}{5}$; head $2\frac{7}{8}$. Snout $3\frac{7}{8}$ in head from snout tip; eye $2\frac{4}{5}$, greater than snout or interorbital; maxillary nearly vertical, reaches about $\frac{1}{8}$ in eye, expansion 2 in eye, length $2\frac{1}{3}$ in head from snout tip; interorbital 2 in eye, low, flat. Median gill rakers rather elongated.

Scales 37 in lateral line to caudal base and 2 more on latter; 4 above, 12 below, 19 predorsal. Scales deciduous.

D. I, 9, ^{second} ~~first~~ branched ray $2\frac{1}{2}$ in total head length; A. I, 32, fin height anteriorly $6\frac{4}{5}$; caudal $1\frac{7}{8}$, emarginate; least depth of caudal peduncle $3\frac{3}{4}$; pectoral $1\frac{1}{8}$, rays I, 28;

cheek with preopercle flange naked.

D. X, 9, I, third spine 2 in head,
first ray 2 ¹/₃; A. III, 7, I, third spine
3 ¹/₃, first ray 3 ¹/₄; caudal equals head;
deeply emarginate, lobes pointed; least
depth of caudal peduncle 3 ¹/₃; pectoral
1 ¹/₄; ventral 1 ¹/₅.

Back and fins very, below silvery.
Iris yellow. Four or 5 longitudinal
broad yellow bands on body. Length
270 mm. (Bleeker.)

East Indies, ^{Riu Kiu.} According to Bleeker
near Synagris furcatus. Prof. Schmidt
notes an example 257 mm. long which
he says agrees completely with Bleeker's
figure and description.

ventral rays I, 5, fin $6\frac{2}{5}$ in total head length.

Silvery gray, becoming black along back. Length 204 mm. (Alcock.)

Andaman Sea, India.

179 Synagris bleekeri Day

Synagris bleekeri Day, Fishes of India, pt. 1, 1875, p. 92, pl. 24, fig. 1. Madras, $\frac{1}{m}$
Boulenger, Proc. Zool. Soc. London, 1887, p. 657
 (Muscat). $\frac{1}{m}$ Day, Fauna British India, Fishes, vol. 1, 1889, p. 528. + Johnstone,
 Rep. Pearl Fisher. Gulf of Manaar, pt. 2, 1904, p. 221 (off Cille). $\frac{1}{m}$ Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, 1903 (1904), p. 150 (Singapore). $\frac{1}{m}$ Zugmayer, Abhandl. Kon. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, band 6, 1913, p. 11 (Oman). $\frac{1}{m}$ Pearson, Ceylon Administrat. Rep., 1915-18, p. F12.

Depth $3\frac{3}{5}$; head $3\frac{1}{4}$, profile very oblique. Snout 3 in head from snout tip; eye $3\frac{3}{4}$, $1\frac{1}{4}$ in snout, equals interorbital; lower jaw slightly projects; maxillary reaches $\frac{1}{5}$ in eye, length $2\frac{4}{5}$ in head from snout tip; 8 front upper canines and band of villiform teeth; lower canines anteriorly and single row of

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Bathyclupea malayana Weber

Bathyclupea malayana Weber, Siboga Exped.,
vol. 57, Fische, p. 193^{pl. 3,} fig. 1, 1913 (type
locality, Flores Sea, 694 meters; Flores
Sea, 538 meters).

— Weber and Beaufort, Fishes Indo Austral.
Archip., vol. 6, p. 183, fig. 36, 1931 (types).

Depth $3\frac{2}{3}$; head $2\frac{1}{2}$. Snout $3\frac{1}{3}$
in head from snout tip; eye $2\frac{3}{4}$,
greater than snout; maxillary
nearly vertical, reaches $\frac{1}{8}$ in eye,
expansion 2 in eye, length $2\frac{1}{4}$ in
head from snout tip; interorbital
very low, apparently level.

Scales 33 to 35 in lateral
line, very deciduous. Lateral line
axial, along side of back, complete.

D. I, 8, first branched ray $2\frac{4}{5}$
in total head length; A. I, 26
or 27, fin height 4; caudal $1\frac{2}{3}$,
emarginate behind; least depth of
caudal peduncle $3\frac{1}{5}$; pectoral
 $1\frac{1}{4}$, rays 26 or 27; ventral rays I, 5,

fin $5\frac{1}{5}$ in total head.

[Color not given.] ~~Weber and~~
Length 240 mm. (Weber and
Beaufort.)

Flores Sea.

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129 Synagris hypselognathus (Bleeker)
Rentex hypselognathus Bleeker, Verhandl.
Kon. Akad. Wetensch. Amsterdam, no. 3,
vol. 13, 1873, p. 9. Java and Celebes; Atlas
Ichth. Ind. Néerland, vol. 8, 1876-77, p.
84, pl. (47) 325, fig. 1 (Java; Celebes).

Depth $3\frac{1}{5}$ to $3\frac{4}{5}$; head $3\frac{1}{3}$ to $3\frac{2}{5}$,
profile oblique. Snout $2\frac{1}{2}$ in head; eye
3 to $3\frac{3}{4}$, $1\frac{2}{5}$ in snout, 1 to $1\frac{1}{2}$ in
interorbital; maxillary reaches $\frac{4}{5}$ to
eye, expansion $2\frac{1}{2}$ in eye, length 3
in head; jaws equal; 4 to 6 upper front
canines, 6 to 8 lower; bands of
villiform teeth in front of jaws, outer
row enlarged; interorbital low;
preopercle edge entire; eye $1\frac{1}{3}$ in
suborbital depth.

Scales 50 in lateral line; 3 above,
12 below, predorsal extend forward
opposite middle of eye; 3 rows on

Bathyclupea argentea (Goode and Bean)

Bathyclupea argentea Goode and Bean,
Oceanic Ichth., p. 190, pl. 123, fig. 415,
 1895 (type locality,
 off Hebris, Blake 37, 365 fathoms). —

Jordan and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 1, p. 836, 1896 (compiled).

— Jordan, Everman, Clark, Rep. U. S.
Comm. Fisher. Appendix, 1928 (1930),
 p. 281 (reference).

— Garman, Mem. Mus. Comp. Zool., vol.
 24, p. 384, 1899 (reference).

Depth $3\frac{3}{5}$; head $2\frac{2}{3}$. Snout $3\frac{1}{3}$ in head from snout tip; eye $2\frac{2}{3}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{4}$ in eye, expansion $2\frac{1}{3}$ in eye, length $2\frac{1}{8}$ in head from snout tip; interorbital 2 in eye, very low.

Scales 33 in lateral line to caudal base and 2 more on latter; 3 above, 8 below, 14 predorsal. Lateral line straight, axial along side of back.

D. I, 8, first branched ray $2\frac{3}{5}$ in total head; A. II, 28, fin height anteriorly $5\frac{7}{8}$?; caudal 2, emarginate, fin small; least depth of caudal peduncle $4\frac{1}{10}$; pectoral $1\frac{1}{4}$, rays I, 23; ventral rays 6, fin 7? in total head.

bands in jaws, outer row little enlarged; interorbital low; preopercle edge entire; preorbital depth $1\frac{1}{5}$ in eye.

Scales 50 in lateral line; 3 above, 11 below, predorsal extend forward to eye center, 4 rows on cheeks to preopercle ridge and flange naked.

D. 8, 9 or 10, fourth spine 2 in head, third ray 2; A. 11, 7 or 8, third spine 4, third ray $2\frac{4}{5}$; least depth of caudal peduncle $3\frac{1}{3}$; pectoral $1\frac{1}{8}$; ventral $1\frac{1}{3}$; caudal 3 in combined head and body to caudal base.

Above rosy, below rose silvery. Iris yellowish. Four or 5 yellowish longitudinal bands, uppermost from above suprascapula to bases of last dorsal ray, others from gill opening to caudal base. Fins rosy. Length 185 mm. (Bleeker.)

East Indies.

Color yellowish silvery.
Length 330 mm. (Goode and Bean.)

West Indies.

Synagris sundanensis (Bleeker)

Dentex sundanensis Bleeker, Verhandl.
Kon. Akad. Wetensch. Amsterdam, ^{No. 3,} vol. 13,
p. 15. Java, Banca, Biliton, Celebes; Atlas
Ichth. Ind. Néerland., vol. 8, 1876-77, p. 86,
pl. (58) 336, fig. 4 (Java, Banca, Biliton,
Celebes).

Dentex tambulus (not Valenciennes) Bleeker,
Verhandel. Batavia. Genootsch. (Sparoid),
vol. 23, 1850, p. 12.

Synagris filamentosus (not Rüppell)
Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 378 (part).

Depth 4; head $3\frac{2}{5}$, profile inclined.
Snout $2\frac{3}{4}$ in head from snout tip; eye
 $3\frac{1}{8}$, $1\frac{1}{8}$ in snout, greater than interorbital;
maxillary reaches $\frac{3}{4}$ to eye, expansion
 $2\frac{3}{4}$ in eye, length $2\frac{7}{8}$ in head from
snout tip; 6 upper front canines, 6 to
8 lower front ones; villiform teeth in

Family Caristiidae

Body oblong ovate, back elevated over eye, slopes down backward. Head much deeper than long, compressed. Snout obtuse. Eye rounded, well forward in head, but little elevated. Mouth terminal or slightly superior. Maxillary reaches below eye. Teeth simple, small. Cheek deep, triangular. Gill rakers lanceolate. Scales very deciduous, small, irregular, uniform. Lateral line present. Dorsal extensive, along all of back, very high. Anal begins medially in body. Caudal truncate. Pectoral small, little below middle in depth. Ventral moderate or long,

jugular or before pectorals.

One genus, small fishes
with greatly developed fins,
very fragile.

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19418. Vossogon market, March 12,
1909. Length 123 mm.

19693. Surigao, Mindanao. May 8,
1908. Length 148 mm.

21598. Kowloon market, China.
October 5, 1908. Length 107 mm.

56247 U.S.N.M. Bulan, Philippines.
Bureau of Fisheries (No. 3371). Length 159
mm. As hemipterus ovenii.

76624 U.S.N.M. Takao, Formosa.
Dr. Fred Baker. Length 193 to 255 mm.
7 examples.

76637 U.S.N.M. Takao. Dr. Fred Baker.
Length 73 to 117 mm. 6 examples.

76638 U.S.N.M. Takao. Dr. Fred Baker.
Length 68 to 83 mm. 3 examples.

Genus Caristius Gill and Smith

Caristius Gill and Smith, Proc. Biol. Soc. Washington, vol. 18, p. 249, 1905. (Type Caristius japonicus Gill and Smith, monotypic.)

Platyberyx Zugmayer, Bull. Inst. Océanogr. Monaco, no. 193, p. 8, January 20, 1911. (Type Platyberyx opalescens Zugmayer, monotypic.)

Elephenor Jordan, Ann. Carnegie Mus., vol. 12, nos. 2-4, p. 330, 1919. (Type Pteraclis macropus Bellotti, orthotypic.)

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Body strongly compressed. Head large, deep. Snout short, declivous. Eye lateral, greatly enlarged, advanced. Mouth large, strongly inclined with lower jaw little protruded. Teeth minute, brush like, recurved, ^{vestiges on vomer and palatines.} Head with mucous cavities. Opercle unarmed. Branchiostegals 5. Scales small, cycloid, with finely concentric striae. Lateral line complete, ~~greatly arched~~. Fin rays all simple. Dorsal begins above eye center. Anal like dorsal, lower. Caudal truncate. Pectoral well developed. Ventrals long.

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ll. Caudal pale yellow and greatly
contrasted with rest of uniform
dark coloration. flavicauda

dd. Body with bluish longitudinal bands or lines
or with dots disposed in longitudinal series.

l. Soft dorsal rays 30 to 32, anal 28 to 30.

ll. Soft dorsal rays less than 30, anal usually
less than 28. sohal

m. No black spot at base of last dorsal
or anal ray.

n. Greenish brown, with 8 longitudinal yellowish
waved lines on body, 3 on dorsals and
anals and 3 transversely on caudal; head
and breast spotted with yellowish.

nn. Brown with 11 or 12 straight longitudinal
bluish streaks. flavoguttatus

nnn. Brown with 12 or 13 undulated whitish lines,
ascending posteriorly. lineatus
undulatus

Analysis of Species.

a.¹ Eye large, diameter half of head; ventrals short, reach front of anal. japonicus.

a.² Eye smaller, $\frac{1}{3}$ of head; ventrals very long, reach caudal base. macroptus.

Genus Dentex Cuvier (no 30)

Dentex Cuvier, Mem. Mus. Hist. Nat. Paris, vol. 1, 1815, pp. 456, 486. Type

Sparus dentex Linnaeus, tautotypic.

Synagris (Klein) Walbaum, Arted Pisc., vol. 3, 1792, p. 586. Atypic. (On Synagris

Klein, Missus, vol. 5, 1740, p. 49.) Type

Dentex vulgaris Valenciennes = Sparus

dentex Linnaeus, designated by Bleeker,

Arch. Néerland. Sci. Nat. Harlem, vol.

11, 1876, p. 278. (Inadmissible).

→ Polysteganus Klunzinger, Verhandl.

zool. botan. Gesellsch. Wien, vol. 20, 1870,

p. 762. Type Polysteganus caeruleopunctatus

Klunzinger, designated by Jordan,

Genera of Fishes, pt. 3, 1919, p. 359.

→ Opsodentex Fowler, Amer. Mus. Novitates,

no. 162, March 31, 1925, p. 4. Type Sparus

macrophthalmus Bloch, orthotypic.

Caristius japonicus Gill and Smith

Caristius japonicus Gill and Smith,
Proc. Biol. Soc. Washington, vol. 18, p.
249, December 9, 1905 (type locality,
Kagoshima). — Smith and Pope, Proc.

U. S. Nat. Mus., vol. 31, p. 490, fig. 10, 1906
(type). — Jordan, Tanaka, Snyder,
Annotat. Zool. Japon., vol. 33, art. 1, p.
371, fig. 327, 1913 (reference). —

Jordan and Thompson, Mem. Carnegie
Mus., vol. 6, no. 4, p. 244, fig. 18, 1914
(copied). — Jordan, Ann. Carnegie Mus.,
vol. 12, nos. 2-4, pl. 54, December 15, 1919.
(upper figure copied)

Platyberyx opalescens Jugmayer, Bull. Inst.
Océanogr. Monaco, no. 1913, p. 8, January 20,
1911 (type locality, Lat. $36^{\circ}5'30''$ N., Long. $9^{\circ}0'30''$,
off Portugal, in 3660 meters), Rés.
Camp. Sci. Monaco, vol. 35, p. 101, pl. 5,
fig. 5, 1911 (type). — Jordan, Ann. Carnegie
Mus., vol. 12, nos. 2-4, p. 330, pl. 55, upper
fig. (copied), December 15, 1919.

Depth $1 \frac{5}{8}$; head $2 \frac{2}{3}$, width $1 \frac{4}{5}$.

Snout 6 in head from snout tip; eye $2 \frac{1}{8}$, greatly exceeds snout or interorbital; maxillary reaches opposite hind eye edge, expansion 3 in eye, length $1 \frac{3}{4}$ in head from snout tip; interorbital 4, rather low, convex. Gill rakers 6 + 13, short points, equal gill filaments, which $\frac{1}{4}$ of eye.

Scales 46 in axial lateral series to caudal base and 2 more on latter; 38 transversely, 18? above eye to dorsal origin, 7? rows on cheek.

Scales larger below pectoral. Scales simple, cycloid, with 23 complete circuli. No lateral line.

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variably, though usually with thick-set buff spots, mostly with dark edges or bordering lines. Hind edge of opercular membrane buff. Dorsals, caudal and pectoral buff, each of former 2 fin-edged narrowly bluish and sometimes pectoral. Head largely deep brown anteriorly, paler behind, and edge narrowly blue. Soft vertical fins usually, but not always variably marked with fine close-set blue dots, even invading blackish ocellus on last soft dorsal rays, which larger than eye. Ventrals dusky, front edges narrowly bluish. Iris light brownish.

East Indian region. The dorsal ocellus is variable, sometimes extending as black blotch down in front of caudal peduncle above. Bleeker reported but 3 examples, 127 to 239 mm. long.

D. 34, sixth ray at least $1\frac{4}{5}$ in combined head and body to caudal base; A. 21, rays (damaged) $4\frac{1}{4}$? in total head length; caudal (broken) $1\frac{2}{3}$?; least depth of caudal peduncle $2\frac{4}{5}$; pectoral (broken) $1\frac{2}{5}$?, rays 19; ventral rays I, 5, fin length $1\frac{1}{8}$ in total head length.

Dull brown, nearly uniform. Iris slate gray. Some of membranes of dorsal and anal with dusky tints. Ventral largely tinged with dusky to blackish.

615

Depth $1\frac{2}{3}$ to $1\frac{7}{8}$; head $2\frac{2}{5}$ to $2\frac{3}{5}$, width $1\frac{2}{5}$ to $1\frac{3}{5}$. Snout 2 to $2\frac{2}{3}$ in head from snout tip; eye $3\frac{4}{5}$ to 6, $1\frac{2}{5}$ to 3 in snout, $1\frac{1}{5}$ to 2 in interorbital; maxillary extends about first $\frac{2}{5}$ in snout, half way or until opposite front nostril in young, 3 to $3\frac{2}{3}$ in head; interorbital 3 to $3\frac{1}{8}$, broadly convex; preopercle spine along inner edge $2\frac{2}{3}$ to $3\frac{2}{3}$. Gill rakers 5 + 11 or 12 short, tubercles about $\frac{1}{4}$ to $\frac{1}{6}$ of gill filaments, which about long as eye.

Scales 50 to 52 counted along and above lateral line to caudal base, tubular scales 46 or 47, ^{7 scales above lateral line} 20 or 21 below. Scales with 6 basal radiating striae; apical denticles 72 to 74, each with long slender root; circuli fine.

D. XIII or XIV, 17, I or 18, I, last spine $1\frac{3}{5}$ to 2 in total head length, eight ray 1 to $1\frac{1}{4}$; A. III, 17, I, third spine $1\frac{7}{8}$ to 2, tenth ray $1\frac{1}{10}$ to $1\frac{1}{2}$; least depth of caudal peduncle, 2 to $2\frac{1}{10}$; caudal convex behind, $1\frac{1}{4}$ to $1\frac{1}{2}$; pectoral 1 to $1\frac{1}{4}$; ventral $2\frac{3}{4}$ to $2\frac{7}{8}$ in combined head ^{and body}.

Generally brown, on body each scale with large bluish blotch, mostly dusky or slaty now. Interorbital broadly forward to include nostrils and rim around orbit, pale brownish to buff, also sometimes obscure bluish spots may be scattered about. Head otherwise dark or neutral-brown, sides

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U. S. N. M., No. 61054. Kagoshima Bay. Dr. H. M. Smith. Length 70? mm (tail broken). Type of Caristius japonicus. Although the fins are damaged the indications show that they were likely of similar contour. Thus the figure by Smith and Pope is apparently somewhat misleading with a long elevated front dorsal lobe. Likewise the anal is apparently too low.

644

Holacanthus xanthometopon Bleeker.

Holacanthus xanthometopon Bleeker, Nat.

Tijds. Ned. Indië, deel 4, 1853, p. 258.

Pelobetang, Sumatra. — Günther, Cat.

Fish. Brit. Mus., vol. 2, 1860, p. 51 (copied).

— Day, Fishes of India, pt. 1, 1875, p. 114

(Bandanans). — Bleeker, Atlas Ichth. Ind.

Neerl., vol. 9, 1877, p. 64, plate (9) 371, fig. 2

(Sumatra, Goram, Waigiu). — Day, Fauna

British India, vol. 2, 1889, p. 18. — Elera,

Cat. Faun. Filip., vol. 1, 1895, p. 489 (Cavite,

Luzon).

343

Caristius macropus (Bellotti)

Pteraclis macropus Bellotti, Atti Soc.
Ital. Sci. Nat. Milano, vol. 42, p. 137, pl.
4, 1903 (type locality, Yokohama).

Caristius macropus Jordan and Thompson,
Mem. Carnegie Mus., vol. 6, no. 4, p. 243,
pl. 28, fig. 7, 1914 (Sagami Bay). —
Horman, Discovery Rep., vol. 2, p. 343,
fig. 1930 (Lat. $2^{\circ} 43' 30''$ S., Long. $100^{\circ} 56' 30''$,
in $4\frac{1}{2}$ meters).

Elephenor macropus Jordan, Ann.
Carnegie Mus., vol. 12, p. 330, pl. 54
(copied), 1919.

Depth $1\frac{9}{10}$; head $2\frac{3}{4}$. Snout $5\frac{1}{4}$ in head; eye $3\frac{1}{8}$, greatly exceeds snout; maxillary reaches $\frac{3}{5}$ in eye, length 2 in head; interorbital moderately high, forms slightly inclined steep front profile. Gill rakers 6 + 14, rather slender, $\frac{1}{2}$ of pupil.

Scales small, circular, cycloid, deciduous, apparently of uniform size, present on opercle. Lateral line distinct, axial along middle of side, complete.

D. 34, origin above middle of eye, fin height $1\frac{1}{8}$ in length of fish to caudal base; A. 22, fin height $1\frac{1}{10}$ in head; caudal $1\frac{1}{8}$, apparently truncate; least depth of caudal peduncle $2\frac{1}{3}$; pectoral $1\frac{1}{8}$, rays 18;

Cheek with more than 3 or 4 rows of scales and preopercle flange scaly. Soft dorsal and anal scaleless, without scaly basal sheaths. Lateral line complete, tubules with ascending branch, bifurcate. Dorsal continuous, spines 10 to 13, rays 10 to 12. Anal spines 3, rays 8 or 9. Caudal more or less forked. Pectoral nearly long as head, ventral little shorter.

Fishes of the warm or tropical Atlantic and Indo-Pacific. Some reach a large size and most valued as food. Many are brilliant rosy or with goldon. The designation of Dentex filamentosus Valenciennes as the type of Dentex luvier, as given by Bleeker ^{2 3 6x n.d.} (Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 279) is invalid, owing to tautonymy. Likewise the

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ventral rays I, 5, fin $1\frac{2}{5}$ in
combined head and body to
caudal base.

Light slate blue. Dorsal,
anal and ventrals black.
Caudal and pectorals colorless.
Length 141 mm.

(Jordan and Thompson.)

Japan.

. Body oblong ovate to partly ovate, usually rather elevated, compressed. Head moderate or large, ^{front profile variously steep.} Sometimes frontal gibbosity developed in old males. Snout moderate or long. Eye moderate or large. Mouth cleft more or less horizontal, jaws nearly equal. Row of sharp canine teeth in both jaws, anterior 4 to 6 enlarged as canines; behind ~~some to~~ several rows of small pointed teeth, laterals uniserial; no molars. Hind nostril oval or elongate slit, equals or larger than front nostril. Preopercle entire. Opercle without prominent spine. Preorbital wide, deep, entire. Gill rakers lanceolate. Pseudobranchiae present. Air bladder with notch behind. Pyloric coeca 4 or 5. Vertebrae 24, of which 14 caudal. Scales moderate or small, ctenoid.

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Family Trachichthyidae

Body short or elongate, compressed. Caudal peduncle moderate. Head moderate or large, compressed, deep. Snout short. Eye usually large, advanced. Mouth usually large, inclined. Maxillary long, expanded behind. Teeth fine, in villiform bands in jaws, often on palate. Suborbitals usually broad. Gill rakers lanceolate. Vertebrae 26 to 28. Scales various, usually rough and deciduous. Belly compressed, with serrated edge. Lateral line present, scales usually large. Dorsal single. Anal shorter than dorsal, spines 1 to 3. Caudal forked or emarginate. Pectorals low. Ventrals short.

Small fishes of deep water, usually blackish. Very minute or young forms have been referred

to a distinct family, as the
 Korsogasteridae by Parr, differing
 chiefly in the absence of scales - or
 the development of minute spinules
 in their place. Korsogaster Parr is
 greatly like Hoptosegethus in generally
 appearance and doubtless only an
 immature or early stage of Tit or
 some allied genus.

6036 to 6038. Little Santa Cruz Island. May 28, 1908. Length 287 to 310 mm.

~~8366 and 8372. Malapascua Island.~~

March 16, 1908. Length 284 to 288 mm.

Side of head and body above with brassy shades extending over olive green, which fades entirely after death but remains on head. No stripes on head, mouth membranes and inner surfaces scarlet, not extending to gill openings. Red tinge between temporal bands of scales. Dorsals bright scarlet or vermilion terminally, and posteriorly. Anal vermilion. Caudal mostly yellow, vermilion at tips. Pectoral rays bright

Analysis of Genera

a.¹ Trachichthyinae. Vent normally placed, at least behind ventrals.

b.¹ Scales present.

b.¹ Abdominal serrae present before vent.

c.¹ Dorsal spines 4 or 5. Trachichthys.

c.² Dorsal spines 6. Hoplostethus.

c.³ Dorsal spines 7 or 8. Gephyroberyx.

b.² no abdominal serrae. Leiogaster.

b.² Scales absent, represented by minute prickles. Korsogaster.

a.² Paratrachichthyinae. Vent more advanced, close behind ventral bases; abdominal serrae behind vent. Paratrachichthys.

Genus Trachichthys Shaw and Hodder

Trachichthys Shaw and Hodder,
 Nat. Miscellany, vol. 10, p. 378, ^{April} 1799.
 (Type Trachichthys australis
Shaw and Hodder, monotypic.)

Trachichthys Cuvier, Règne Animal,
 vol. 2, p. 325, 1817. (Type
Trachichthys australis Shaw
 and Hodder.)

Genus Trachichthys ⁴ ~~Shaw~~ ^{Land nodder}

Body ovate, compressed. Head large, deep. Muzzle very short, obtuse. Eye large, high. Mouth oblique, mandible slightly protruded in front. Maxillary reaches below hind part of eye. Teeth very fine, villiform in jaws, on vomer and palatines. Small triangular spine on upper edge of opercle. Large spine at preopercle angle. Long strong spine backwards from suprascapula. Branchiostegals 8. Scales semielliptical, roughly granular, edges serrated, upper and lower ends of anterior edge prolonged into flat, smooth, triangular spines on covered portion. Scales of lateral line not enlarged.

Coll¹²⁹

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Synagris worcesteri (Evermann and Seale)
hemipterus worcesteri Evermann and Seale,
Bull. Bur. Fisher., vol. 26, 1906 (1907),
p. 81, fig. 14. Bacon, Philippines.

Depth $3\frac{1}{2}$; head $3\frac{1}{3}$, width $1\frac{7}{8}$. Snout
 $2\frac{2}{5}$ in head from snout tip; eye $3\frac{2}{3}$, $1\frac{1}{2}$
in snout, $1\frac{1}{5}$ in interorbital; maxillary
reaches $\frac{4}{5}$ to eye; 5 or 6 small front
canines in each jaw; ~~less distinct or~~
~~scarcely evident below~~ band of
inner villiform teeth all around above
and below in front; upper jaw with
outer row of slightly enlarged simple
conic teeth and below give place to
single row of slightly larger conic teeth;
interorbital $3\frac{2}{3}$ in head from snout
tip, slightly convex, with median depression;
preopercle edge membranous, entire.
Gill rakers 5+5 low tubercles, $\frac{1}{4}$ gill
filaments, which $1\frac{2}{3}$ in eye.

Row of very large compressed scales forming strongly serrated edge on abdomen. Dorsal with 3 to 5 robust graduated roughened spines and 10 or 11 branched rays. Anal with 3 spines and 9 rays, like dorsal. Caudal forked. Pectoral moderate, low. Ventral smaller, with spine and 6 branched rays.

yellowish. Fins uniform brownish.

Only known from the type. This evidently has the caudal peduncle stained, toward and inclusive of the caudal base, blackish brown. Known by its general resemblance to the smaller Synagris metopias, but that species with a narrower preorbital, no lower canine, high course of lateral line and the maxillary reaching beyond front of eye. Points in common, however, are the comparatively small pectoral, entire dorsal fin and short hind dorsal and anal rays.

55917 U.S.N.M. Bacon. Bureau of Fisheries. Length (caudal broken) 413 mm. Type of hemipterus worcesteri.

Trachichthys australis Shaw and nodder

Trachichthys australis Shaw and nodder, Nat. Miscellany, vol. 10, pl. 378, ^{April} 1799 (type locality, New Holland [= Port Jackson]).

— Shaw, General Zool., vol. 4, ^{pt. 1,} p. 630, ^{pl. 92,} 1803 (New Holland). ~~Cuvier, Hist. Nat. Poiss., vol. 3, p. 2, 1829 (compiled)~~ — Günther, Cat. Fish. Brit. Mus., vol. 5, p. 10, 1859 (New Holland "Shaw's original specimen").

— Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1879, p. 364 (Port Jackson). — Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 4, 1881, p. 511 (compiled). — McCoy, Prodr. Zool. Victoria, vol. 2, pl. 114, 1886 (Hobson's Bay).

— McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 139, July 7, 1925 (reference).

— McCulloch, Fishes New South Wales, ed. 2, p. 33, ~~1927~~ pl. 12, fig. 118a, 1927; Mem. Austral. Mus., vol. 5, pt. 1, p. 133, June 29, 1929 (reference).

p. 291 (Cape of Good Hope). $\frac{1}{2}$ Von Bonde,
 Fishes Marine Surv. South Africa,
 Special Rep. no. 1, 1923, p. 22. $\frac{1}{2}$ Barnard,
 Ann. South African Mus., vol. 21, pt. 2,
 1927, p. 717 (Table, False Bay, Agulhas
 Bank, Algoa Bay, Natal, to 70 fathoms).
Dentex macrodens Castelnau, Mém.
 Poiss. Afrique Australe, 1861, p. 30.
 Algoa Bay.

Depth $2\frac{2}{3}$; head $2\frac{7}{8}$, width $2\frac{1}{3}$.
 Snout $3\frac{1}{10}$ in head from snout tip;
 eye $4\frac{2}{3}$, $1\frac{2}{5}$ in snout, $1\frac{1}{5}$ in interorbital;
 maxillary reaches opposite front pupil
 edge, expansion $\frac{2}{5}$ of eye, length $2\frac{4}{5}$
 in head from snout tip; teeth uniserial,
 2 long canines in front of each jaw,
 large, curved, lower pair smaller;
 upper inner band of villiform teeth
 all around, with outer band of small
 even enlarged teeth; lower jaw with

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Trachichthys australis Cuvier,
Hist. nat. Poiss., vol. 3, p. 229,
1829 (compiled).

Amphiprion carinatus Schneider,
Syst. Ichth. Bloch, p. 557, 1801
(type locality, Australian shores
[= Port Jackson]).

~~Trachichthys jacksoniensis
Macleay, Proc. Linn. Soc. New
South Wales, vol. 5, pt. 4, p. 511,
1881 (type locality, Port Jackson):~~

inner front band of villiform teeth, followed each side of jaw with row of slightly enlarged conic teeth; interorbital $3 \frac{3}{4}$, convex; greatest preorbital width equals eye; preopercle entire. Gill rakers $10+17$, lanceolate, $\frac{3}{5}$ of gill filaments, which $1 \frac{2}{3}$ in eye.

Scales 56 in lateral line to caudal base and 7 more on latter; 7 above, 15 below, 60 predorsal extend forward slightly before front nostril; smaller on top of head, caudal base and in basal sheaths of vertical fins; 9 rows on cheek to preopercle sides and 5 more across preopercle flange. Scales with 14 to 16 basal radiating striae; 100 apical denticles, small weak points with 10 transverse series of basal elements; circuli very fine.

Trachichthys jacksoniensis Macleay, Proc. Linn. Soc. New South Wales, vol. 3, p. 511, 1879 (type locality, Port Jackson). —

Günther, Rep. Voy. Challenger, vol. 22, p. 22, 1887 (Port Jackson). — Goode and Bean, Oceanic Ichth., p. 518, 1895 (reference).

h.¹ Six rows of dark dots: lineopunctatus.

h.² Four to 6 wave blue, or dark, bands along sides and black blotch below sixth dorsal spine. undulosus.

h.³ Reddish, with golden sheen. turnifrons.
f.³ Cheek with but 5 rows of scales above preopercle ridge.

i.¹ Preopercle flange with 3 rows of scales; pink above, washed with gold, below silvery and upper fins yellow. spariformis.

i.² Preopercle flange naked.

j.¹ Uniform rosy, hindcaudal edge dark.

j.² Body uniform, base of membranes of dorsals and anals each with small dark spot and each fin with dark submarginal line. peronii.
nutsubarai.

e.² Some dorsal spines elongate or filamentous.

h.¹ Third to fifth dorsal spines elongate; silvery pink, with 4 or 5 bluish longitudinal stripes; 4 dark cross bands in young. filosus.
over 3 name only

Depth $1\frac{5}{6}$; head $2\frac{4}{5}$, width $1\frac{1}{3}$.
 Snout $4\frac{2}{3}$ in head from snout tip;
 eye $2\frac{5}{6}$, greatly exceeds snout or
 interorbital; maxillary reaches $\frac{2}{5}$
 in eye, expansion $1\frac{7}{8}$ in eye, length
 $1\frac{1}{3}$ in head from snout tip; teeth
 in broad villiform bands in jaws,
 in 10 to 12 transverse series; patches
 of similar teeth on vomer and palatines;
 interorbital $3\frac{1}{2}$, convex; strong spine
 at preopercle angle 3 in eye;
 suprascapula $3\frac{7}{8}$ in head from
 snout tip. Gill rakers $17+25$, $1\frac{2}{5}$
 in eye; gill filaments $1\frac{1}{2}$ in gill
 rakers.

Scales 47 in lateral line to
 caudal base and 3 more on latter;
 9 above, 9 below, 22 predorsal, 4 rows
 on cheek. Scales bony, finely
 roughened. Bones of head finely rugose.

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Holacanthus melanospilus Bleeker.

Holacanthus melanospiloides Bleeker, Act.
Soc. Sci. Ind. Neerl. (acht. Visch. Amboin),
vol. 2, 1857, p. 56. Amboina. — Günther,
Cat. Fish. Brit. Mus., vol. 2, 1860, p. 48 (copied).

Holacanthus melanospilus Bleeker, Atlas
Ichth. Ind. Neerl., vol. 9, 1877, p. 60, plate
(6). 568, fig. 2 (Amboina). — Klunzinger,
Fische Roth. Meer., 1884, p. 60 (Koseir).

Greenish to yellowish silvery, with 15
transverse dusky narrow bars and 7
dusky lines over top of head. Black
ocellus on breast before ventral base.
Length 211 mm. (Bleeker)

Apparently related to Holacanthus
lamarck, the soft dorsal and anal
ending in slender points.

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D. III, 12, I, fourth spine 4 in total head length, first branched ray $1\frac{1}{2}$; A. II, 11, I, third spine 2, first branched ray $2\frac{1}{10}$; caudal $1\frac{1}{5}$, deeply forked, lobes pointed; least depth of caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{3}{5}$; ventral $1\frac{4}{5}$.

Uniform brownish. Iris neutral gray. Dorsal and anal dusky terminally, spines and bases pale. Caudal with upper and lower edges pale, rest of lobe dark brown. Pectoral pale brown. Ventral dusky brown medially, front edge or spine pale.

Queensland, New South Wales, Victoria, Western Australia.

807
as shown in Bleeker's plate but
the body stripes entirely meeting its
margin or with very slightly expanded
ends. Belly rusty brownish. Spinous
dorsal white terminally, including all
of first 2 spines and their membranes,
white narrowing to marginal stripe on
soft fin, extends nearly to tip of
produced rays; lower portion of dorsal
with body colors carried on, posterior
part of vertical edge dull orange,
extreme vertical margin narrowly blue
or black submarginal line. Anal largely
purplish, brown terminally; yellow body
stripes invade fin and become purple
on body; tips of spines and edge of
fin bright purple, soft fin with very
narrow black edge. Caudal cadmium
orange, body stripes ending at its base.
Pectoral black, membranes hyaline terminally.

U. S. N. M., no. 59906. Port Hacking,
New South Wales. D. G. Stead.
Length 146 mm.

806
8073. Alimango Bay, Burias Bay.
March 5, 1909. Length 260 mm. Body
alternately striped bright yellow and
purple, yellow stripes about half width
of pupil or nearly $\frac{1}{3}$ of diameter of eye.
Nuchal region and anterior back slaty
or smoky, slightly more purplish on
snout and cheek, dark brown on
breast; black stripe across interorbital
passes through eye, curves downward on
posterior preopercle limb and bordered
by bright purple lines equal in width
to yellow body lines; large black area
across shoulder including pectoral base,
extends about half way between upper
angle of gill opening and front of
spinous dorsal and bounded on front
by bright purple line passing down
near hind opercle edge; posterior
border of black not limited by yellow

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Genus Hoplostethus Valenciennes

Hoplostethus Valenciennes, Hist. Nat. Poiss., vol. 4, p. (469) 344, 1829. (Type Hoplostethus mediterraneus Valenciennes, monotypic.)

Body short, deep, compressed. Head very large, short, compressed, deeper than long, with very inconspicuous mucous cavities. Muzzle blunt. Eye very large. Mouth very oblique, jaws equal. Maxillary long, expanded behind, with distinct supplemental bone, reaches hind eye edge. Teeth very small, fine, in villiform bands in jaws and on palatines, none on vomer. Opercle little developed, vertical ridge anterior, spine small or obsolete. Preopercle with strong spine at angle, long vertical hind edge

finely serrated. Suborbital with radiating ridges and few spines. Gill opening large. Gill membranes separate, free from isthmus. Gill filaments short. Branchiostegals 8. Air bladder simple. Pyloric coeca numerous. Vertebrae 26, of which 15 caudal. Scales moderate or small, ctenoid. Abdomen with series of bony plates, each ending in retrorse spine. Lateral line present, scales enlarged. Dorsal continuous, short, spines 6, graduated. Anal spines 3, graduated. Caudal forked, rudimentary rays spinous. Pectoral low, rather long. Ventral rather short, with spine and 6 rays.

Bathypelagic, red colored fishes. I cannot accept Collett's contention that Hoplostethus, formed from

two Greek neuter substantives,
requires, requires a neuter
termination for the ^{specific} names of
the members of this genus.
As its original termination
was masculine form as
proposed by Valenciennes it
may remain so.

Cnr 179

Dentex rupestris Valenciennes

Dentex rupestris Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 231. Cape of Good Hope.

$\frac{1}{m}$ Smith, Illustrat. Zool. South Africa, Fishes, 1849, pl. 14 (Southern Africa).

$\frac{1}{n}$ Bleeker, Natuurk. Tijdschr. Nederland. Indië, vol. 21, 1860, p. (49, 52) 59 (Cape of Good Hope). $\frac{1}{m}$ Thompson, Marine Biol. Rep. South Africa, no. 4, 1918, p. 82.

Barnard, Ann. South African Mus., vol. 21, pt. 2, 1927, p. 713 (Table and False Bay, Agulhas Banks, Natal).

$\frac{1}{n}$ Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 370 (Cape Sea).

Dentex brevis Kner, Reise Novara, Fische, 1865, p. 61. Cape of Good Hope. $\frac{1}{m}$ Thompson, Marine Biology, Rep. South Africa, no. 4, 1918, p. 82.

The following young specimens seem to belong to some species of this genus. They have a row of median abdominal scutes, maxillary reaches behind eye, pectoral equals head and reaches $\frac{3}{5}$ in anal and fins are all pale...

3026 to 3027. D. 5486. Botobolo Point (Panaon Island), S. 19° W., 6 miles (lat. 10° 02' N., long. 125° 19' 20" E.), between Leyte and Mindanao, July 31, 1909. In 585 fathoms. Length 88 to 130 mm.

fine teeth in front of each jaw;
 interorbital $2\frac{7}{8}$ to $3\frac{1}{2}$, broad,
 slightly depressed or concave; preopercle
 edge with very minute, feeble or
 obsolete denticles. Gill rakers 6+5,
 short tubercles, $2\frac{1}{4}$ in gill filaments,
 which $3\frac{1}{4}$ in eye.

Scales 44 or 45 in lateral line to
 caudal base and 1 or 2 more on latter;
 6 scales above, 14 below, 10 or 11
 predorsal forward opposite hind eye
 edge; 5 rows on cheek to preopercle
 ridge and flange naked. Suprascapular
 edge membranous, roughened. Scales
 with 10 to 14 basal radiating striae,
 also 3-4 incomplete auxiliaries; 44 to
 115 apical denticles, with 1 to 3 transverse
 series of basal elements; circuli fine.

D. X, 10, I, fourth spine 2 to $2\frac{4}{5}$ in
 head, fifth ray $1\frac{3}{4}$ to $1\frac{4}{5}$; A. III, 9, I,

Analysis of Species

a. Hoplostethus new-subgenus.

Body without silver lateral tube-like stripe on under surfaces.

b. Paired fins pale.

c. Depth 2 to 2 1/2; dorsal spine V to VII.

d. Dorsal rays 11 or 12. mento.

e. Dorsal rays 13 to 15.

f. Superficial bones of head fragile, narrow.

g. Dorsal spine 5; abdominal spine 15 to 19. pacificus.

h. Dorsal spine 6; abdominal spine 9, 10, 13.

i. Depth 1 1/2 to 2 1/2; lateral line short. pacificus.

j. Depth 2 1/2 to 3 1/2.

k. Lateral line short, intermedia.

l. Lateral line short, intermedia.

m. Superficial bones of head coarse, broad. pacificus.

to caudal base, and 3 more on latter;
 4 above, 11 below, 12 predorsal forward
 opposite last $\frac{2}{5}$ in eye, 3 rows on
 cheeks; caudal largely covered with
 small scales. Scales with 7 basal
 radiating striae, 54 to 67 small obtuse
 apical denticles, with 2 transverse
 series of basal elements; circuli very
 fine.

D. X, 9, I, fifth spine $1\frac{1}{2}$ to $1\frac{2}{3}$ in
 head, third ray $2\frac{1}{5}$ to $2\frac{1}{3}$; A. III, 7, I,
 third spine 3, first ray $2\frac{1}{3}$ to $2\frac{4}{5}$;
 caudal 1?, well forked; least depth
 of caudal peduncle $2\frac{4}{5}$ to $2\frac{5}{6}$;
 pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$.

Uniform brown above or on upper
 half of body. Lower half pale to
 whitish with brassy luster. Iris
 brass white. Fins pale or light brown.

Red Sea, Arabia, Madagascar, India,

d. 3 dorsal rays 11.

attenuated.

c. 2 depth 2 3/5; ca. 1 1/2; abdominal
sum. 10.

fin rays 11 or 12.

c. 3 depth 2 4/5; ca. 1 1/2, 1 1/2

abdominal scutes 11 or 12.

c. 4 dorsal fins 2 each; depth 1 1/2; ca. 1 1/2
ca. 1 1/2; ca. 1 1/2

caudal peduncle

c. 5 dorsal fins 2 each; depth 1 1/2; ca. 1 1/2

caudal peduncle; dorsal fins 2 each; depth 1 1/2; ca. 1 1/2
caudal peduncle; dorsal fins 2 each; depth 1 1/2; ca. 1 1/2
caudal peduncle; dorsal fins 2 each; depth 1 1/2; ca. 1 1/2
caudal peduncle; dorsal fins 2 each; depth 1 1/2; ca. 1 1/2

Oentex obtusus (Von Hasselt and V. Müller)
Bleeker, Verhandel. Kon. Akad. Wetensch.
 Amsterdam, no. 3, vol. 13, 1873, p. 21
 (name in synonymy).

Depth $3\frac{1}{4}$ to $3\frac{1}{3}$; head $3\frac{1}{3}$ to $3\frac{3}{5}$,
 width $1\frac{7}{8}$ to 2. Snout $2\frac{2}{3}$ to $2\frac{3}{4}$ in
 head; eye $3\frac{1}{8}$ to $3\frac{1}{3}$, $1\frac{1}{4}$ in snout,
 little greater than interorbital;
 maxillary nearly reaches eye, expansion
 $2\frac{2}{5}$ to 3 in eye, length $2\frac{1}{2}$ to 3 in head;
 lips rather wide, fleshy; inner band
 of minute teeth in each jaw with
 outer series of enlarged ones, becoming
 enlarged toward mouth corners; 6
 upper front canines; interorbital
 4 to 5, slightly concave. Gill rakers 3 or
 4 + 6, compressed, short, spinose
 tubercles, $1\frac{1}{4}$ in gill filaments which
 $1\frac{4}{5}$ in eye.

Scales 48 or 49 in lateral line

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Hoplostethus mento (Garman)

Trachichthys mento Garman, Mem. Mus. Comp. Zool., vol. 26, p. 58, pl. 11, figs. 2-7, 1899 (type locality, Lat. $7^{\circ}31'30''$ N., Long. $79^{\circ}14'$ W., 458 fathoms; Lat. 7° N., Long. 78° to 79° , 259 to 511 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische, p. 396, 1906 (reference).

Depth 2; head $2\frac{1}{4}$ to $2\frac{2}{5}$, width 2 to $2\frac{1}{3}$. Snout $3\frac{4}{5}$ to 4 in head from snout tip; eye 5, $1\frac{1}{5}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary very oblique, extends little beyond eye, expansion 1 to $1\frac{1}{8}$ times eye, length $1\frac{2}{5}$ to $1\frac{3}{5}$ in head from snout tip; bands of villiform teeth in jaws, very minute narrow band on palatines, none on vomer; interorbital $3\frac{1}{5}$ to $3\frac{1}{4}$ in head, convex; nasalia rather close, directed downward. Gill rakers 7+13, lanceolate, $1\frac{1}{5}$ in eye; gill filaments $\frac{4}{5}$ of gill rakers.

Scales 43 ~~mm~~ ^{close along above} lateral line to caudal base and 2 more on latter; pores 25; 8 scales above, 16 below,

lines. Another blackish-brown blotch upward from pectoral axil includes hind edge of opercle and humeral region, extending well above level of eye and reflected below and behind pectoral base; front edge with bluish bordering line and hind edge with yellow line giving off oblique yellowish lines of body. Edges of lips bordered with bluish. Spinous dorsal as exposed, soft dorsal marginally and all of caudal light yellowish-brown. Soft dorsal narrow beaded with blue and submarginal dusky line. No border to caudal. Anal much darker than trunk or tail, only longitudinal yellow bands curving along its extent; edge narrowly bluish and with dark submarginal line. Pectoral and ventral brownish, former with blackish base and latter with spine and membranes bluish.

Queensland, ^{micronesia,} ~~micronesia,~~

Red Sea, Ceylon, East Indies, Polynesia.
 Mauritius, Zanzibar,

A very striking species, easily known by its color-pattern. The oblique lines are not quite alike in any two specimens and moreover are different on either side of the body.

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18 predorsal forward opposite
hind eye edge. Abdominal serrae
13. Scales with 18 to 20 basal
circuli; 7 or 8 long slender apical
denticles, 3 series transversely.

D. V or VI, 11, I or 12, I, spines
short and weak, third $4\frac{1}{3}$ in
total head length, fourth ray 3;
A. I to III, 7, I to 10, I, first branched
ray 5?; caudal (damaged) forked;
least depth of caudal peduncle 6;
pectoral 2?; ventral $2\frac{1}{2}$? to 3.

Uniform brownish, head little
paler. Iris light gray. Inside
gill opening dark or dusky. Fins
pale, dusky blotch at base of
each caudal lobe.

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Depth $1\frac{3}{5}$ to $1\frac{4}{5}$; head $3\frac{1}{4}$ to $3\frac{2}{3}$, width $1\frac{3}{5}$ to $1\frac{4}{5}$. Snout $2\frac{1}{10}$ to $2\frac{1}{5}$ in head from snout tip; eye 4 to $4\frac{1}{3}$, $1\frac{4}{5}$ to 2 in snout, $1\frac{2}{5}$ to $1\frac{3}{5}$ in interorbital; maxillary extends about half way in snout length, not quite to front nostril, $3\frac{1}{10}$ to $3\frac{1}{3}$ in head; interorbital 3 to $3\frac{1}{10}$, broadly convex; preopercle spine along inner edge $2\frac{4}{5}$ to $3\frac{1}{6}$. Gill rakers 7 + 13, short strong points, $5\frac{1}{3}$ in gill filaments, which equal eye.

Scales 76 to 80 in obscure course of lateral line to caudal base; 13 scales above lateral line, 35 to 37 below. Scales with 2 to 4 basal radiating striae; apical denticles 29 to 36, each with long slender root; circuli fine.

D. XIII or XIV, 18, I to 20, I, last spine $1\frac{1}{2}$ to $1\frac{3}{4}$ in total head length, sixth ray $3\frac{1}{8}$ to $3\frac{3}{4}$; A. III, 18, I or 19, I, third spine $1\frac{4}{5}$ to $2\frac{1}{8}$ in head, ninth ray $1\frac{1}{2}$; least depth of caudal peduncle, $2\frac{1}{4}$ to $2\frac{7}{8}$; caudal convex behind, $1\frac{2}{5}$ to $1\frac{1}{2}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{8}$; ventral 1 to $1\frac{1}{10}$.

Brown generally. Side with 19 to 24 pale yellowish-brown lines, inclined slightly superiorly, extending on soft dorsal and anal and on caudal peduncle to caudal base. Iris dark brown. Blackish-brown band across interorbital and down from eye posteriorly narrowing below until faint at angle of preopercle spine and edges bordered with bluish

Gulf of Panama. Although my material is quite poorly preserved and the fins greatly damaged, they seem to show at least 5 or 6 dorsal spines, a character which at once suggests the species belongs in Hoplostethus. The scales on the median line of the belly are scarcely enlarged in the smaller specimens, and all agree quite well with Garman's figure. This weak armature is a good distinction, in comparison with Hoplostethus mediterraneus and H. japonicus.

U. S. N. M., no. 57878.

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Albatross Collection (3384 A).

Mus. Comp. Zool. Length 92 to 115
mm. 3 examples.

U. S. N. M., no. 91573.

Between Ecuador and Panama.

March 3, 1888. Albatross Collection
(2793). Length 95 mm. Very poor
specimen.

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Hoplostethus pacificus Garman

Hoplostethus pacificus Garman, Mem.
Mus. Comp. Zool., vol. 26, p. 56, pl. A
fig. 1 (colored), pl. 10, pl. 11, fig. 1, pl. 71,
fig. 4 (lateral system), December 1899
(Type locality, Lat. $0^{\circ}58'30''$ S., Long. 89°
 $17''$ W., Galapagos Islands, in 354
fathoms). — McCulloch, Biol. Res.

Endeavour, vol. 2, pt. 3, p. 97, July 3,
1914 (description in key).

Hoplostethus pacificum Braver, Deutsch.
Tiefsee Exped. Valdivia, vol. 15, Tiefsee
Fische, p. 396, 1906 (reference).

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Depth 2; head $2\frac{1}{5}$. Snout 5 in
head from snout tip_s; eye $5\frac{3}{4}$,
 $1\frac{1}{3}$ in snout; orbit 4 in head,
greater than snout; maxillary
extends half an ^{orbital} diameter
beyond orbit, expansion $1\frac{1}{10}$ in
orbit, length $1\frac{3}{5}$ in head from
snout tip; interorbital
moderately high. Gill rakers
6 + 15, shorter than eye.

Scales 58 along lateral line,
enlarged scales 28 in lateral
line of which last 2 on caudal
base. Median abdominal
beel with 15 to 19.

D. V, 13 or 14, first branched
ray $3\frac{1}{5}$ in total head length;
A. III, 9, first branched ray
 $3\frac{7}{8}$; caudal $1\frac{1}{10}$, deeply forked;
least depth of caudal peduncle

When fresh back to lateral line
 dark yellow, with broad blue band
 along ridge extending into lower
 dorsal. Body with number of bright
 blue dots running into caudal base,
 dots larger and paler below lateral
 line. Dorsal gumboke, tinged with
 pale violet. Eye yellow, with blue
 streak over top and at side. Fins
 pale mauve yellow, with shades of
 pale violet.

hatal coast.

53025 A. N. S. P. } hatal coast, in 8 fathoms.

2 examples, A. N. S. P. 2 + 1, T,
 smaller at 8 fathoms. A. N. S. P. 2 + 1, T,
 Length 240 to 322 mm.

4; pectoral $1\frac{1}{6}$, reaches opposite base of last anal ray; ^{3 rays 19} ventral rays I, 6, fin $2\frac{1}{3}$ in total head length, inserted little before pectoral origin.

Rose red, ^{when fresh} more vermilion on fins. Iris, cheeks and vertical preopercular flange yellowish. In alcohol gray brown, blackish on paired fins terminally and caudal base. Hind parts of soft vertical fins yellowish. Peritoneum black. (Garman.)

Galapagos Islands. According to Garman differs from Hoplostethus mediterraneus and H. japonicus in small spinous dorsal, large pectoral, and increased abdominal

each jaw, single row of outer conic teeth,
inner band of fine granular ones;
interorbital $3\frac{7}{8}$ to $4\frac{1}{2}$, evenly convex.
Gill rakers 10 to 12 + 15, lanceolate.

Scales 59 or 60 in lateral line to
caudal base and 3 to 10 more on latter;
12 or 13 above, 13 to 16 below, 11 or 12
rows on cheek to preopercle ridge and
4 more transversely on flange, 62 to
66 predorsal forward to front nostril.
Scales with 9 to 13 basal radiating
striae; 78 to 147 apical denticles,
with 9 to 13 transverse rows of basal
elements.

D. XII, 9, I or 10, I, fourth spine $2\frac{3}{4}$
to $2\frac{7}{8}$ in head, first ray $3\frac{1}{2}$ to $3\frac{7}{8}$; A.
III, 8, I, second spine $3\frac{1}{10}$, first ray $3\frac{1}{3}$;
caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, widely forked or
binate; least depth of caudal peduncle
 $\frac{3}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{8}$; ventral $1\frac{7}{8}$ to $1\frac{9}{10}$.

scutes. Though its size is not given Garman's figure is about 182 mm long.

^{cm 129} Dentex preorbitalis Günther
Dentex preorbitalis Günther, Cat. Fishes
 Brit. Mus., vol. 1, 1859, p. 368, Cape Seas.
 (Figure not published.) + Gilchrist and
Thompson, Ann. South African Mus., vol.
 6, 1908-11, p. 157 (Natal); Ann. Durban
 Mus., vol. 1, pt. 4, 1917, p. 356 (references).
 + Thompson, Marine Biology. Rep. South
 Africa, no. 4, 1918, p. 82. + Barnard,
 Ann. South African Mus., vol. 21, pt. 2,
 1927, p. 714 (Natal coast in 40 fathoms).
Dentex preorbitalis Fowler, Proc. Acad.
 Nat. Sci. Philadelphia, 1925, p. 235
 (Natal coast).

Depth $2\frac{2}{3}$ to $2\frac{7}{8}$; head 3, width 2 to
 $2\frac{1}{3}$. Snout 2 to $2\frac{1}{8}$ in head; eye $4\frac{1}{2}$,
 2 to $2\frac{1}{3}$ in snout, equals interorbital;
 maxillary reaches opposite eye,
 expansion $1\frac{3}{4}$ to $1\frac{4}{5}$ in eye, length $2\frac{3}{4}$
 to $2\frac{4}{5}$ in head; 4 canines in front of

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Hoplostethus japonicus Hilgendorf

Hoplostethus japonicus Hilgendorf, Sitzb.
Ber. naturf. Fr. Berlin, p. 78, 1879
(type locality, Japan). — Goode and

Bean, Oceanic Ichth., p. 519, 1893 (name).

— Jordan and Snyder, Annotat. Zool.
Japan., vol. 3, p. 63, 1901 (Yokohama).

— Garman, Mem. Mus. Comp. Zool.,
vol. 24, p. 383, 1899 (reference).

Hoplostethus mediterraneus var. japonica
Steindachner and Döderlein, Denks. Akad.
Wiss. Wien, vol. 47, pt. 1, p. 242, pl. 1, figs. 1-
3, 1883.

Hoplostethus mediterraneus (not Valenciennes), Günther, Rep. Voy. Challenger, vol. 22, p. 21, 1887 (part; Japan).

{ Steindachner and Döderlein, Denks. Akad. Wiss. Wien, vol. 47, pt. 1, p. 218, 1883 (Japan). —

~~Vaillant, Expéd. Sci. Travailleur et Talisman, Poiss., p. 378, 1888 (part)~~

— Alcock, Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, p. 2, 1894 (Bengal Bay, 145 to 250 fathoms); Zool. Illustrat.

Investigator, pt. 3, pl. 14, fig. 3, 1895 (no data) ; Ishikawa and Matsuura,

vol. 65, pt. 2, p. 314, 1896 (Bengal Bay, 145 to 250 fathoms; off Ceylon, 320 to 296 fathoms);

Cat. Deep Sea Fish. Indian Mus., p. 34, 1899 (off Madras, Trincomali, Travancore, 145 to 430 fathoms).

Surunga Bay). — — — — —

Hoplostethus mediterraneus (not Valenciennes), Günther, Rep. Voy. Challenger, vol. 22, p. 21, 1887 (part; Japan).

{ Steindachner and Döderlein, Denks. Akad. Wiss. Wien, vol. 47, pt. 1, p. 218, 1883 (Japan). —

~~Vaillant, Expéd. Sci. Travailleur et Talisman, Pois., p. 378, 1888 (part)~~

— Alcock, Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, p. 2, 1894 (Bengal Bay, 145 to 250 fathoms); Zool. Illustrat.

Investigator, pt. 3, pl. 14, fig. 3, 1895 (no data); Ishikawa and Matsuura,

FEI T Prelim. Cat. Fish. Mus. Tokyo, p. 58, 1897. 'HL-1' (reference).

VI 'H' — Alcock, Descript. Cat. Fish. Indian Mus., p. 34, 1899 (off Madras, Trincomali, Travancore, 145 to 430 fathoms).

VI 'H' 1 Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 26, p. 7, 1902 (Sagami Bay, Kishu, Suruga Bay).

Investigator, p. 1
(no data) J. V. D. Sh.
Prelim. Cat. Fish.

(reference)
Alcock, Desc.
Mus., p. 34, 18
Travancore, 14

Jordan and
vol. 26, p. 7, 19
Surunga Bay)

Chromis chromis (Lacepede)
Pom., p. 6, 1830, p. 315
1844, p. 227 (Kamohi Island, New
Zealand)
1874, p. 65 (Red Sea, East
Africa)

— Brauer, Deutsch. Tiefsee Exped.
Valdivia, vol. 15, Tiefsee Fische, p. 285,
 1906 (off East Africa, 761 to 1362 meters).

~~Jugmayer, Rés. Camp. Sci. Monaco,
 vol. 35, p. 96, pl. 5, fig. 4, 1911~~

— Snyder, Proc. U. S. Nat. Mus., vol. 42,
 p. 410, 1912 (Kagoshima). — Jordan, Tanaka,
Snyder, Journ. College Sci. Tokyo, vol. 33,
 p. 114, 1913 (Japan). — Weber, Siboga
 Exped., vol. 57, Fische, p. 179, 1913
 (Molucca Passage).

~~Waite, Rec. Austral. Mus., vol. 2, no. 1,
 p. 70, 1921~~

— Gilchrist, Fisher, Marine Surv. South
 Africa, ~~Spec. Rep.~~ ^{no. 2, special Rep. no.} 3, p. 64, 1922 (off South
 Africa, 165 to 298 fathoms).

— Barnard, Ann. South African Mus.,
 vol. 21, pt. 1, p. 362, June 1925 (off
 Saldanha Bay, Cape Point, East London,
 Natal, 165 to 450 fathoms). — Weber and
Beaufort, Fishes Indo Austral. Archip.,
 vol. 5, p. 217, fig. 59, 1929 (Molucca Passage,
 397 meters).

— Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., vol. 2, p. 38, 1931 (Kagoshima). — Anonymous, Illustrat. Jap. Aquat. Plants and Animals, vol. 1, pl. 23, fig. 2, 1931.

Trachichthys darwini (not Johnson) Goode and Bean, Oceanic Ichth., p. 188, pl. 56, fig. 207 (copied Steindachner), 1895 (copied).

Hoplostethus mediterraneus var. latus McCulloch, Biol. Res. Endeavour, vol. 2, pt. 3, p. 97, fig. 5, July 3, 1914 (type locality, Great Australian Bight, F. Long. 126° 45', 190 to 320 fathoms; Long. 126° to 127° E., Lat. 33° 20' S., 80 to 100 fathoms).

Depth $1\frac{7}{8}$ to $2\frac{1}{8}$; head $2\frac{1}{3}$ to $2\frac{1}{2}$, width 2 to $2\frac{1}{8}$. Snout $4\frac{1}{8}$ to $4\frac{1}{3}$ in head from snout tip; eye $3\frac{1}{8}$ to $3\frac{1}{2}$, greater than snout, 1 to $1\frac{1}{10}$ in interorbital; maxillary very oblique, reaches opposite hind eye edge, expansion $1\frac{1}{4}$ to $1\frac{2}{5}$ in eye, length $1\frac{1}{3}$ to $1\frac{2}{5}$ in head from snout tip; interorbital $2\frac{4}{5}$ to $3\frac{1}{4}$, low, convex; nasalia low, rather close set, short spines directed little downward and forward. Gill rakers 10 + 16, lanceolate, twice gill filaments or $1\frac{1}{3}$ in eye.

Scales 50 close along above lateral line to caudal base and 5 more on latter; pores 28 or 29

A 714. Si Simil Island. September 27, 1907. Length 369 mm.

7898. Si Simi Island, Masbate. February 17, 1908. Length 255 mm.

Head brown generally. many narrow slate gray stripes along side of head and body, about wide as interspaces, somewhat irregular in back and lower parts, tending to follow profiles of body. Broad yellow stripes pass through eye across top of opercle. Branchiostegal membrane edged black. Fin dark brown, with some bronze. Dorsal like body, somewhat yellowish, margins distinctly black; several indistinct narrow-slaty bars, probably marked in life. Anal

in lateral line of which 1 or 2 on caudal base; 13 scales above, 21 below, 26 predorsal forward opposite hind preopercle ridge; 4 rows behind expansion of maxillary on cheek.

Abdominal serrae 9 to 13. Scales with 19 parallel basal striae; apically scale studded with fine short denticles, 21 rows longitudinally and 10 transversely.

D. VI, 13, I, sixth spine $2\frac{2}{3}$ to 3 in total head length, second branched ray $1\frac{7}{8}$ to $2\frac{1}{8}$; A. III, 9, I, third spine $3\frac{3}{4}$ to $4\frac{1}{8}$, first branched ray $2\frac{7}{8}$ to $3\frac{3}{4}$; caudal $1\frac{1}{6}$ to $1\frac{1}{3}$, deeply forked; least depth of

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2228. Maculabo Island. June
13, 1909. Length 303 mm.

1016. Murcielago Bay, Mindanao.
August 20, 1907. Length 150 mm.

4346. Murcielago Bay. August 21, 1907.
Length 258 mm.

14651. Parang, Mindanao. May 23,
1908. Length 224 mm.

5894 and 5875. Polloc, Mindanao.
May 22, 1908. Length 245 to 260 mm.
Head brown, with numerous pale
blue stripes, most pronounced on
side of head and upper part of body.

14046. Sacol Island. September 9, 1909.
Length 156 mm.

12207. Santa Cruz Island, Marinduque.
April 24, 1908. Length 208 mm.

caudal peduncle 3 to 3 1/5; pectoral 1 1/8 to 1 1/3; ventral 1 4/5 to 1 7/8.

Back and upper surfaces brown, sides and below silvery white. Iris pale. Fins all pale or pale brown to pale yellowish brown.

South Africa, India, Ceylon, East Indies, Philippines, Great Australian Bight, Japan. A large series of examples shows but slight variation. Mc Culloch has separated the Australian form as Hoplostethus mediterraneus var. latus, though I fail to find any satisfactory characters for distinction. His figure and description of H. intermedius (Hector) shows that species with a slightly deeper body (depth 2 1/10 to 2 1/4 in 6 examples

Meanthurus sublineatus Day, Fishes of
India, pt. 2, 1876, p. 204, plate 48, fig. 3.

Waltair, Coromandel Coast.

Harpurus gnophodes Fowler, Journ. Acad. Nat.
Sci. Phila., vol. 14^{series}_{1A}, June 10, 1904, p. 544,
plate 42, upper figure. Tadung, Sumatra.

102 to 173 mm) and with 10 anal rays.

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Acanthurus mata (non Cuvier) Bleeker, Nat.

Nyds. Ned. Indie, deel 7, 1854, p. 432.

(Batavia, Java); deel. 8, 1855, p. 393

(Amboina); deel. 9, 1855, p. 284 (Manado,

Celebes); deel. 11, 1856, p. 95 (Banda), p. 253

(Laboeha, Batjan); deel. 12, 1856, p. 508 (Wahai,

Ceram); deel. 17, 1858-59, p. 143 (Boeleng,

Bali); deel. 22, 1860, p. 113 (Barn), p. 249

(Timor). — Bleeker, Verh. Batav. Genoot.

(hal. Ich. Bengal), deel 25, 1853, p. 48. —

Bleeker, Nct. Soc. Ind. Néerl., deel 1, no. 3,

1856, p. 8 (Macassar), p. 31 (Manado); deel

2, no. 7, 1857, p. 5 (Amboina). — Bleeker,

Verslag. Akad. Wet. Amsterdam, deel 15,

1863, p. 21 (Hita, Amboina). — Thurston,

Gov. Central Mus. Madras (Pearl Fish.

Manaar), 1890, p. 92 (Tuticorin and Tambas).

— Pearson, Ceylon Adm. Rep. Marine Biol.,

1912-13, p. E6.

Zeuthen mata Kendall and Ratcliffe, Mem. Mus.
Comp. Zool., vol. 26, no. 7, 1911, p. 340 (Rangiroa
and Makarua).

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2958. D. 5538. Apo Island (C.), S.
64° W., 7.3 miles (9° 08' 15" N., 123° 23'
20" E.), between Negros and Siquijor.
In 256 fathoms. August 19, 1909.
Length 135 mm. O. V, 13, I.

3577. D. 5533. Balicasag Island
(C.), N. 71° E., 9.4 miles (9° 27' 15" N.,
123° 31' 48" E.), between Cebu and
Siquijor. In 437 fathoms. August
19, 1909. Length 38 mm.

D. 5486. Botobolo Point (Panaon
Island), S. 19° W., 6 miles (10° 02' N.,
125° 19' 20" E.), between Leyte and
Mindanao. In 585 fathoms. July 31,
1909. Length 33 to 35 mm. Three examples.

2840. D. 5403. Capitanillo Island
Light, S. 46° W., 15.7 miles (11° 10' N., 124°
17' 15" E.), between Leyte and Cebu.
In 182 fathoms. March 16, 1909. Length
98 mm. O. VI, 14, I; A. III, 10, I; several 13.

1701. D. 5408. Capitanillo Light, N. 25° W., 20.8 miles (10° 40' 15" N., 124° 15' E.), between Cebu and Leyte. In 159 fathoms. March 18, 1909. Length 97 mm.

2279. D. 5409. Capitanillo Light, N. 19° W., 22.0 miles (10° 38' N., 124° 13' 08" E.), between Cebu and Leyte. In 189 fathoms. March 18, 1909. Length 135 mm.

2354. D. 5361. Corregidor Light, S. 89° W., 7.2 miles (14° 24' 15" N., 120° 41' 30" E.), Manila Bay. In 12 fathoms. February 8, 1909. Length 121 mm.

2384. D. 5292. Escarceo Light, N. 36° W., 3.25 miles (13° 28' 45" N., 121° 01' 12" E.), China Sea, vicinity southern Luzon. In 162 fathoms. July 23, 1908. Length 95 mm.

2353. D. 5501. Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (8° 37' 37" N., 124° 35' E.), northern Mindanao and vicinity. In 214 fathoms. August 4, 1909. Length 142 mm.

2009, 2010, 3506, 3507 to 3509. D. 5502.

Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (8° 37' 37" N., 124° 35' E.), northern Mindanao and vicinity. In 214 fathoms. August 4, 1909. Length 123 to 158 mm. Mostly with D. VI, 13, I; A. III, 9; scutes 11 or 12.

1676, 2432 to 2435. D. 5503.

Macabalan Point Light (Mindanao), S. 31° E., 6.6 miles (8° 36' 26" N., 124° 36' 08" E.), northern Mindanao and vicinity. In 226 fathoms. August 4, 1909. Mostly with D. VI, 13, I; A. III, 9, I; scutes 11.

3748. D. 5504. Macabalan Point Light (Mindanao), S. 39° E., 6 miles (8° 35' 30" N., 124° 36' E.), northern Mindanao and vicinity. In 200 fathoms. August 5, 1909. Length 132 mm.

1905, D. 5505. Macabalan Point Light (Mindanao), S. 31° E., 7.7 miles (8° 37' 15" N., 124° 36' E.), northern Mindanao and vicinity. In 220 fathoms. August 5, 1909. Length 159 mm.

3245, D. 5577. Int. Dromedario, S. 9° W., 10.9 miles (5° 20' 36" N., 119° 58' 51" E.), north of Tawi Tawi. In 240 fathoms. September 23, 1909. Length 124 mm.

5143, 5144, D. 5516. Pt. Jagolo Light (Mindanao), S. 80° W., 9.7 miles (8° 46' N., 123° 32' 30" E.), northern Mindanao and vicinity. In 175 fathoms. August 9, 1909. Length 58 mm. Two examples.

5146, 5147, 5148, 5149, D. 5517. Pt. Jagolo Light, S. 83° W., 10.5 miles (8° 45' 30" N., 123° 33' 45" E.), northern Mindanao and vicinity. In 169 fathoms. August 9, 1909. Length 58 to 64 mm.

396

2297. D. 5518. Pt. Tagolo Light,
S. 64° W., 8.7 miles ($8^{\circ}48' N.$, 123°
 $31' E.$), northern Mindanao and
vicinity. In 200 fathoms. August 9,
1909. Length 54 mm. Length 91 to
138 mm. 19 examples.

D. 5519. Pt. Tagolo Light, S. 71°
W., 8.7 miles ($8^{\circ}47' N.$, $123^{\circ}31'15''$
E.), northern Mindanao and vicinity.
In 182 fathoms. August 9, 1909.
12 examples.

1994. D. 5222. San Andreas ~~Light~~
Island (W.), S. $57^{\circ} E.$, 9.20 miles
($13^{\circ}38'30'' N.$, $121^{\circ}42'45'' E.$), between
Marinduque and Luzon. In 195 fathoms.
April 24, 1908. Length 119 mm.

3435, 3436. D. 5542. Tagolo Light,
S. 70° W., 13.2 miles ($8^{\circ}48'30'' N.$, 123°
 $35'30'' E.$), northern Mindanao and
vicinity. In 200 fathoms. August 20, 1909.
Length 127 mm.

387

2989. D. 5374. Jayabar light (outer),
N. 9° E., 7.4 miles ($13^{\circ}46'45''$ N., $121^{\circ}35'$
 $08''$ E.), Marinduque Island and
vicinity. In 190 fathoms. March 2, 1909.
Length 106 mm.

U. S. N. M., no. 51379. Suruga Bay,
Japan. ~~In 167 fathoms~~ May 17, 1900.
Albatross Collection (3721). Length
215 mm.

U. S. N. M., no. 51380. Suruga Bay,
Japan. In 167 fathoms. May 17, 1900.
Albatross Collection (3738). Length 138
mm.

U. S. N. M., no. 57599. Japan. P. L.
Jony. Length 214 mm.

U. S. N. M., no. 59794. Kagoshima, Japan.
Dr. H. M. Smith. Length 60 to 105 mm.
Two examples. As Hoplostethus
mediterraneus.

U. S. N. M., No. 59795. Kagoshima, ³⁸⁸
Japan. Dr. H. M. Smith. June 12.
Length 63 to 70 mm. Two examples.
As Hoplostethus mediterraneus.

U. S. N. M., No. 71085. Kagoshima,
Japan. Bureau of Fisheries. Length
105 mm.

U. S. N. M., No. 71192. Kagoshima,
Japan. Bureau of Fisheries. Length
53 to 64 mm. As Hoplostethus
mediterraneus.

389

Hoplostethus intermedius (Hector)

Trachichthys intermedius Hector, Trans. New Zealand Inst., vol. 7, p. 245, pl. 11, fig. 18A, 1875 (type locality, off Cape Farewell, New Zealand).

— Günther, Rep. Voy. Challenger, vol. 22, p. 24, pl. 5, fig. D, 1887 (off New Zealand, 275 fathoms). — Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 4, p. 380, 1889 (Bengal Bay, 272 fathoms).

— Goode and Bean, Oceanic Ichth., pp. 188, 519, 1895 (reference). — Alcock, Descript. Cat. Fish. Indian Mus., p. 36, 1899 (Bengal Bay, 272 fathoms). — Mc

— Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, (p. 396, Tiefsee Fische) 1906 (reference).

— Wace, rec. Canterbury Mus., vol. 11, no. 1, p. 19, April 25, 1907 (reference). —

Mc Culloch, Zool. Res. Endeavour, pt. 1, p. 40, December 22, 1911 (note).

Journ. Asiatic. Soc. Bengal, vol. 65, pt. 2, p. 314, 1896 (Bengal Bay, 272 fathoms);

389

Hoplostethus intermedius (Hector)

Trachichthys intermedius Hector, Trans. New Zealand Inst., vol. 7, p. 245, pl. 11, fig. 18A, 1875 (type locality, off Cape Farewell, New Zealand).

— Günther, Rep. Voy. Challenger, vol. 22, p. 24, pl. 5, fig. D, 1887 (off New Zealand, 275 fathoms). — Aloock, Ann. Mag. Nat. Hist., ser. 6, vol. 4, p. 380, 1889 (Bengal Bay, 272 fathoms).

— Goode and Bean, Oceanic Ichth., pp. 188, 519, 1895 (reference). — Aloock, Descript. Cat. Fish. Indian Mus., p. 36, 1899 (Bengal Bay, 272 fathoms). — McCulloch, Res. Austral. Mus., vol. 6, p. 349, 1907 (Tasman Sea).

— Waite, Rec. Canterbury Mus., vol. 1, no. 1, p. 19, April 25, 1907 (reference). —

McCulloch, Zool. Res. Endeavour, pt. 1, p. 40, December 22, 1911 (note).

Journ. Asiatic. Soc. Bengal, vol. 65, pt. 2, p. 314, 1896 (Bengal Bay, 272 fathoms);

Res. Endeavour, vol. 2, pt. 3, p. 97.

3, 1914 (description in key).

1899 (Bengal B
Descript. Cat. p. 100)
Mc Culloch, Rec. Au

1907 (Tasman
Waite, Rec. C

p. 19. April 25
Mc Culloch, Zo

Hoplostethus intermedius Waite, Rec.

Canterbury Mus., vol. 1, no. 4, p. 319,

December 28, 1912 (reference). —

McCulloch, Biol. Res. Endeavour, vol.

2, pt. 3, p. 100, fig. 6, July 3, 1914

(Great Australian Bight, E. Long. 129° 28', in 350 to 450 fathoms); Menzies

Austral. Mus., vol. 5, pt. 1, p. 132,

June 29, 1929 (reference).

(391)
to eye

Depth $2\frac{1}{4}$; head $2\frac{3}{5}$. Snout, 5 in head from snout tip; eye $3\frac{1}{5}$, greater than snout; orbit $2\frac{3}{4}$, twice snout length; maxillary reaches $\frac{4}{5}$ in eye, expansion $1\frac{1}{4}$ in eye, length $1\frac{2}{5}$ in head from snout tip; interorbital rather low. Longest gill raker $1\frac{1}{3}$ to $1\frac{3}{4}$ in eye.

Scales in lateral line large, 28 or 29. Abdominal scutes 9 to 13.

D. VI, 13, second, ^{branched} ~~dorsal~~ ray 2 in total head length; A. III, 10, first ray 3; caudal 1, deeply emarginate; least depth of caudal peduncle $3\frac{1}{8}$; pectoral $1\frac{1}{8}$, rays 15 or 16; ventral rays I, 6, fin 2 in total head length.

The two following doubtfully belong with Dentex:

Dentex trivittatus (Bloch) enig
Labrus trivittatus Bloch, Naturges.
Ausland. Fische, pt. 5, 1791, p. 106.

"Japan."

Sparus vittatus Bloch, op. cit., pt. 5,
1791, p. 275.

This may represent some species of Dentex, though from Bloch's description unidentifiable. The figure shows 9 rows of scales on the cheeks, inclusive of the preopercle flange. Three longitudinal blue bands from eye along side of body. Paired fins rosy, others pale. Jaws with 4 upper and 2 lower front canines.

392
Length 173 mm. (McCulloch.)
Great Australian Bight,
New South Wales, New Zealand.

Dentex species Case 129

Dentex rivulatus (not Rüppell 1835)

Bennett, Proc. Zool. Soc. London, pt. 3, 1835, p. 91. Trebizond, Black Sea.

Oblong oval. Head moderate. Eye large. Four canines in front of each jaw.

D. XI, 11; A. III, 9; P. 15. Above golden.

Blackish spots along lateral line.

Silvery flexuous lateral bands.

Length 163 mm.

Differs from Dentex macrophthalmus in the more elongate body, head tumid, eye smaller, pectoral more elongately subrounded and caudal greatly forked. Color like Scolopides cancellatus.

Hoplostethus mediterraneus Valenciennes

Hoplostethus mediterraneus Valenciennes,

Hist. nat. Poiss., vol. 4, p. 469, 1829

(type locality, Nice). — Costa, Fauna Napoli, Pesc., pt. , pl. 10, 1844

— Günther, Cat. Fish. Brit. Mus., vol. 7, p. 9, 1859 (Madeira). — Canestrini,

Fauna d'Italia, pt. 3, Pesci, p. 73, 1870-74 (Nice; Procida). — Günther,

Ann. Mag. Nat. Hist., ser. , vol. , p. 485, 1878

Jordan and Gilbert, Bull. U.S. Nat.

Mus., no. 16, p. 458, 1882 (off Chesapeake Bay). — Moreau, Hist. Nat. Poiss.

France, vol. 2, p. 322, 1881.

↑ — Vaillant, Exped. Sci. Travailleurs

et Talisman, Poiss.; p. 378, pl. 27,

figs. 5-5c, 1888 (off Morocco,

Canaries, Azores, Azores, Banc d'Arguin,

Azores, 140 to 1435 meters). —

Hilgendorf, Archiv naturges., 1889, p. 207 (Azores).

37° 50' 50" N., long. 11° 23' W., 182 fathoms;

lat. 39° 49' N., long. 71° 25' W., 216 fathoms;

Hoplostethus mediterraneus Valenciennes

Hoplostethus mediterraneus Valenciennes,
 Hist. Nat. Poiss., vol. 4, p. 469, 1829
 (type locality, Nice). — Costa, Fauna Napoli,
 Pesc., pt. , pl. 10, 184 ().
 — Günther, Cat. Fish. Brit. Mus.,
 vol. 7, p. 9, 1859 (Madeira). — Canestrini,
 Fauna d'Italia, pt. 3, Pesci, p. 73,
 1870-74 (Nice; Procida). — Günther,
 Ann. Mag. Nat. Hist., ser. , vol. ,
 p. 485, 1878 (). —
Jordan and Gilbert, Bull. U.S. Nat.
 Mus., no. 16, p. 458, 1882 (off Chesapeake
 Bay). — Moreau, Hist. Nat. Poiss.
 France, vol. 2, p. 322, 1881. —

→ Goode and Bean, Oceanic Ichth., p.
 189, pl. 56, fig. 208, 1895 (lat. 41° 43'
 N., long. 69° 09' 30" W., 208 fathoms;
 lat. 29° 03' 15" N., long. 88° 16" W., 324
 fathoms; lat. 38° 37' 30" N., long. 73°
 11' W., 243 fathoms; lat. 39° 32' 30" N.,
 long. 72° 21' 30" W., 302 fathoms; lat.
 39° 50' 30" N., long. 71° 23' W., 182 fathoms;
 lat. 39° 49' N., long. 71° 25' W., 216 fathoms;

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(France, vol.

→ Goode and
189, pl. 56,
N., long. 69°
lat. 29° 00' 00"
fathoms; be
W., 273 f
long: 72° 21'
39° 50' 50" N.,
lat. 39° 49' N.,

lat. $38^{\circ}35'N$, long. $73^{\circ}13'W$, 312 fathoms; lat. $39^{\circ}43'N$, long. $71^{\circ}32'W$, 302 fathoms; lat. $37^{\circ}25'N$, long. $74^{\circ}18'$, $157\frac{1}{2}$ fathoms). —
Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 837, 1896 (compiled).
 — Garman, Mem. Mus. Comp. Zool., vol. 24, p. 383, 1899 (reference). —
Jordan, Evermann, Clark, Rep. U. S. Comm. Fisher., 1928 (1930), pt. 2, p. 234 (reference).

Depth 3; head 3, profile sloping, front orbital ridges prominent, especially with age. Eye 4 to 7 in head, $2\frac{1}{2}$ to $2\frac{3}{4}$ in snout, $1\frac{1}{3}$ to $1\frac{4}{5}$ in interorbital, $1\frac{1}{2}$ to 2 in preorbital depth; canines strong; hind nostril oval. Gill rakers 8 or 9 below, short and stout.

Scales 58 to 62 in lateral line; 11 above, 28 to 30 below, 17 or 18 rows on cheeks inclusive of ones on preopercle flange; predorsal scales forward to hind nostril; scales above lateral line smaller than those below.

D. XI, 10 or 11, spines moderate, fifth longest or $2\frac{1}{2}$ to 3 in head; A. III, 8, second spine stronger but shorter than third.

Reddish or brownish, becoming paler, pinkish or orange or whitish below. Back with bluish, greenish or bronzy

Hoplostethus mediterraneum Collett,
 Rés. Camp. Sci. Monaco, vol. 10, p.
 37, 1896 (name). — Brauer,
 Deutsch. Tiefsee. Exped. Valdivia,
 vol. 15, Tiefsee Fische, p. 285, 1906
 (part), p. 396 (reference). — Jugmayer,
 Rés. Camp. Sci. Monaco, vol. 35, p. 96, pl.
 5, fig. 4, 1911 (~~lat. 33° 59' 30" N.~~
 St. Vincent, Cape Verde, 851 meters;
 Gibraltar, 749 to 310 meters).

Trachichthys pretiosus Lowe,
 Proc. Zool. Soc. London, vol. 7, 1839,
 p. 77 (type locality, Madeira);
 Fishes of Madeira, p. 55, pl. 9,
 1843 (Madeira).

reflections. Jaws yellowish, dark patch
or band between eyes. Fins grayish
or reddish. Pectoral axil often dark.
Ventral pale. Reaches 1500 mm.

(Barnard.)

Cape of Good Hope, Natal.

Depth $2\frac{1}{8}$ to $2\frac{1}{4}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width 2 to $2\frac{1}{10}$. Snout $4\frac{1}{5}$ to $4\frac{2}{3}$ in head from snout tip; eye $3\frac{1}{8}$ to $3\frac{1}{4}$, greater than snout, slightly greater than interorbital; maxillary oblique, reaches below hind eye edge, expansion $1\frac{2}{5}$ to $1\frac{2}{3}$ in eye, length $1\frac{1}{2}$ to $1\frac{3}{5}$ in head from snout tip; bands of fine villiform teeth in jaws and on palatines, none on vomer; interorbital $3\frac{1}{4}$ to $3\frac{1}{3}$, broadly convex; nasalia minute, close, directed downward. Gill rakers 8 + 15, lanceolate, twice gill filaments or $1\frac{4}{5}$ in eye.

Scales 62 ^{close, along above} ~~none~~ lateral line to caudal base and 4 more on latter; pores 31, of which last 1 on caudal base; 12 scales above, 20 below, 22 predorsal forward opposite hind eye edge. Abdominal serrae 9 to 12. Scales with

905

Holacanthus geometricus Lucifède, Hist.

Nat. Poiss., vol. 4, 1804, pp. 528, 535, plate

13, fig. 1 (on Douwing formose Renard,

Pois. Indigees, vol. 1, 1718-19, ~~pp. 11, 12~~, plate

5, fig. 34, holacanthus). — Cuvier, Hist.

Nat. Poiss., vol. 7, 1831, p. ~~142~~¹⁸⁹ (compiled).

Holacanthus bishopi Seale, Ann. Trop. Bishop

Mus., vol. 1, no. 3, 1900, p. 106. Agaña, Guam.

Distinguished from Holacanthus semicirculatus
by the lines circular on the body, at
least largely so in the young, with
age the circles more or less posterior.

Mauritius, Nicobars, East Indies,
Micronesia, Polynesia.

20 basal parallel striae; apical denticles 23, short, scattered, 7 or 8 transversely.

D. VI, 13, I, last spine $2\frac{1}{5}$ to $2\frac{3}{4}$ in total head length, third ray $1\frac{9}{10}$ to 3; A. III, 10, I, third spine $2\frac{7}{8}$ to $3\frac{7}{8}$, first branched ray $2\frac{2}{3}$ to 3; caudal $1\frac{1}{3}$ to $1\frac{1}{2}$, forked; least depth of caudal peduncle $3\frac{3}{4}$ to $3\frac{7}{8}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{7}{8}$ to 2.

Pale brown, lighter and with silvery white reflections below, especially over head. Iris silvery white. Fins more or less pale yellowish white, upper front lobe

Paired fins like body color.

A 625. Singaan Island.

September 21, 1909. Length 288 mm.

A 1113. Makyan Island. November

25, 1909. Length 295 mm.

14740. Limbe Strait, Celebes.

November 10, 1909. Length 293 mm.

66053 U.S.N.M. Fakarava. Albatross

Collection. Length 320 mm. As Guthrie

mata. It agrees largely with ~~my~~ ^{Fowler's} ~~fig~~ ^{fig}

figure of Harpurus gnophodes, which
we believe to be the adult. The Fakarava

example shows more blue horizontal lines

than is indicated by the figure in question,

these doubtless having largely faded.

of dorsal brownish.

Mediterranean, Atlantic.

like dorsal, with 4 narrow slaty bars. Pectoral dusky, darkest basally. Ventral brown.

A 624. ^{Bisibiri.} Simalua Island, September 22, 1907. Length 268 mm.

A 652 and 17098. Simalua Island. September 23, 1907. Length 163 to 298 mm.

A 555. Kulada Island. September 18, 1908. Length 335 mm. Ground color slaty, fading olive yellowish. Side of head and body with numerous horizontal indigo purple stripes. In fading sulphur yellow band through eye. Dorsal and anal without bars, ground color very dark olive and edges blackish. Caudal slaty, without definite markings.

U. S. N. M., no. 26726.

399

Off Chesapeake Bay. Fish Hawk
Collection (897). Length 78 mm.

U. S. N. M., no. 28906. Lat. $39^{\circ}49'N.$,
Long. $71^{\circ}25'W.$
Bureau of Fisheries. 1881.
Length 50 mm.

U. S. N. M., no. 29052. Lat. $38^{\circ}35'N.$,
Long. $73^{\circ}13'W.$, off Delaware Capes.
Fish Hawk Collection.
Length 93 to 110 mm. Two examples.

U. S. N. M., no. 35656. Lat. $38^{\circ}37'30''N.$,
Long. $73^{\circ}11'W.$
September 12, 1884. Albatross Collection
(2232). Length 110 mm.

U. S. N. M., no. 42073.
Paris Museum (87+265). Length 36 mm.

U. S. N. M., no. 42075.
Paris Museum (87+267). Length 38 mm.

400

U. S. N. M., no. 42084.

Paris Museum (87+270). Length 196 mm.

U. S. N. M., no. 43624. Lat. $15^{\circ}28'39''N$,
Long. $80^{\circ}36'W$.

April 10, 1884. Albatross Collection
(2659). Length 190 to 237 mm. Two
examples.

U. S. N. M., no. 44323. Lat. $11^{\circ}43'N$,
Long. $69^{\circ}9'30''W$.

February 18, 1884. Albatross Collection
(2125). Length 155 to 183 mm. Three
examples.

401

Hoplostethus gigas McCulloch

Hoplostethus gigas McCulloch, Biol. Res. Endeavour, vol. 2, pt. 3, p. 100, pl. 19, July 3, 1914 (type locality, Great Australian Bight, S. $33^{\circ} 18'$ E. $126^{\circ} 42'$, 130 to 170 fathoms); Mem. Austral. Mus., vol. 5, pt. 1, p. 132, June 29, 1929 (reference).

Depth $2\frac{1}{4}$; head $2\frac{3}{4}$. Snout to orbit 4 in head from snout tip; eye $5\frac{1}{10}$, $1\frac{2}{5}$ in snout; maxillary reaches opposite hind eye edge, expansion equals orbit, length $1\frac{1}{2}$ in head from snout tip; interorbital rather low. Lower gill rakers 13, $1\frac{1}{3}$ to $1\frac{1}{2}$ in eye.

Scales moderately large, enlarged ones in lateral line 28 to 30. Row of 8 or 9 large abdominal scutes. Exposed surfaces of bones of head finely granular.

D. V to VII, 13 or 14, second branched ray $2\frac{1}{4}$ in total head length; A. III, 9 or 10, first branched ray $2\frac{3}{4}$;

caudal $1\frac{1}{3}$, deeply forked;
least depth of caudal peduncle
 $3\frac{3}{5}$; pectoral $1\frac{3}{4}$, reaches far
back at end of last abdominal
scute, rays 15; ventral rays
I, 6, fin $2\frac{1}{10}$ in total head
length.

Yellowish white. Deep rose
pink on fins when fresh.

Length 525 mm. (McCulloch.)

Great Australian Bight.

Analysis of ~~the~~ species 6 ft one c. ds 466

a. dentex. Frontal scales not extending forward before eye.

b.¹ Scales above lateral line distinctly smaller than those below lateral line or on flanks.

c.¹ Dorsal spines 11; 17 or 18 rows of scales on cheeks. rupestris.

c.² Dorsal spines 12; 11 or 12 rows of scales on cheeks. praeorbitalis.

b.² Scales more or less uniform.

d.¹ Spinous dorsal, caudal and ventral without filaments.

e.² Dorsal spines graduated, moderate or subequal.

f.¹ Cheeks with preopercle flange scaled, at least with age and at least ^{7 or} 8 scales above preopercle ridge.

g.¹ Body depth equals head; silvery rose or pink and 4 to 6 bright silvery longitudinal bands, fins rosy. argyrozona Case 13
name only

g.² Body depth greater than head.

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Hoplostethus atlanticus Collett

Hoplostethus atlanticus Collett, Bull. Soc. Zool. France, p. 306, 1889 (type locality, Flores, Azores, in 1557 meters).

— Goode and Bean, Oceanic Ichth., p. 189, 1895 (copied). — Garman, Mem.

Mus. Comp. Zool., vol. 24, p. 383, 1899 (reference). — McCulloch, Biol. Res. Endeavour, vol. 2, pt. 3, p. 97, July 3, 1914 (description in key).

Hoplostethus atlanticum, ^{Collett,} Rés. Camp. Sci. Monaco, vol. 10, p. 17, pl. 3, fig. 12, 1896 (type). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, ^{Tiefsee} Fische, p. 396, 1906 (reference). — Richard, Bull. Inst. Océan. Monaco, no. 162, p. 147, February 1910 (Azores, 1557 meters).

8775. Quinalasan Island. June 12, 1909.
Length 270 mm.

7054. Romblon Harbor, Romblon.
March 25, 1908. Length 105 mm.

5588. San Miguel Harbor, Ticao Island.
April 21, 1908. Length 308 mm.

8705. San Miguel Island. June 4, 1909.
Length 288 mm.

12214, 12215, 14171. Santa Cruz Island,
Marinduque. April 24, 1908. Length 170 to
178 mm. *

A639, A640. Simaluc Sibi Sibi Island,
north of Tawi Tawi. September 23, 1909.
Length 290 to 535 mm.

Depth 2; head $2\frac{1}{4}$, Snout 4 in head from snout tip; eye $3\frac{4}{8}$, little greater than snout; maxillary extends $\frac{2}{5}$ an eye diameter behind eye, expansion $1\frac{1}{8}$ in eye, length $1\frac{2}{5}$ in head from snout tip; interorbital rather high.

Scales 30 in lateral line, enlarged; body scales extremely fine; row of 20 feeble abdominal bachelers.

D. VI, II, 15, sixth spine $4\frac{1}{8}$ in total head length, first branched ray $2\frac{1}{10}$; A. II, 11, fourth branched ray $2\frac{1}{3}$; caudal $1\frac{1}{3}$, deeply emarginate; least depth of caudal peduncle $4\frac{1}{3}$; pectoral $1\frac{2}{3}$, rays I, 17; ventral rays I, 6, fin $\frac{1}{2}$ in total head length.

Length 135 mm. (Collett.)

Can 129 Dentex argyrozona Valenciennes

Dentex argyrozona Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 235. Cape of Good Hope. $\frac{1}{m}$ Smith, Illustrat. Zool. South Africa, Fishes, 1849, pl. 19 (east and west coasts South Africa). $\frac{1}{m}$ Pappe, Synop. Edible Fishes Cape, 1853, p. 21 (Cape market). $\frac{1}{m}$ Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 368 (Cape of Good Hope, Cape Seas, False Bay). $\frac{1}{m}$ Castelnau, Mem. Poiss. Afrique Australe, 1861, p. 29 (Table and Simon's Bay). $\frac{1}{m}$ Kner, Reise Novara, Fische, 1865, p. 63 (part). $\frac{1}{m}$ Lampe, Deutsche Sudpolar Exped., vol. 15, pt. 2, 1914, p. 234 (Simonstown). $\frac{1}{m}$ Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 356 (references). $\frac{1}{m}$ Thompson, Marine Biology. Rep. South Africa, no. 4, 1918, p. 81 (references). $\frac{1}{m}$ Fowler, Proc. A.S. Nat. Mus., vol. 56, 1911,

Hoplostethus fernandezianus (Günther)⁴⁰⁵

Trachichthys fernandezianus Günther,
Rep. Voy. Challenger, vol. 22, p. 23, 1887
(type locality, Juan Fernandez). —

Goode and Bean, Oceanic Ichth., p. 518,
1895 (reference). — Steindachner, Zool.
Jahrb., Suppl., vol. 4, pt. 2, p. 297, pl.
28, figs. 4-4a, 1898 (Juan Fernandez).
— Delfin, Revist. Chil. Hist. Nat.,
vols. 3-4, p. 49, 1899-1900 (reference).

Depth $2\frac{3}{5}$; head $2\frac{4}{5}$. Snout $6\frac{1}{4}$ in head from snout tip; eye $2\frac{3}{5}$, greatly exceeds snout; maxillary extends about $\frac{1}{5}$ eye diameter behind eye, expansion $1\frac{7}{8}$ in eye, length $1\frac{3}{5}$ in head from snout tip; interorbital low; opercle with radiating striae.

Scales 52 to 54 in lateral line to caudal base; 90 scales close along above lateral line. Abdominal serrae 8 or 9.

D. V, 14, third branched ray $1\frac{9}{10}$ in total head length; A. III, 11, first branched ray 2; caudal $1\frac{1}{10}$, deeply forked; least depth of caudal peduncle $2\frac{7}{8}$; pectoral $1\frac{4}{5}$, rays 13; ventral rays I, 6, fin $2\frac{1}{6}$ in

Can 179 Synagris mulloides (Bleeker)
Dentex mulloides Bleeker, Naturk. Tijdschr.
 Nederl. Indië, vol. 3, 1852, p. 576. Siboga,
 Sumatra; Atlas Ichth. Ind. Néerland.,
 vol. 8, 1876-77, p. 89, pl. (48) 326, fig. 5
 (Sumatra).

Synagris mulloides Gunther, Cat. Fishes
 Brit. Mus., vol. 1, 1859, p. 374 (copied). $\frac{1}{27}$
Meyer, An. Soc. Españ. Hist. Nat. Madrid,
 vol. 14, 1885, p. 15 (North Celebes).

Hemipterus mulloides Fowler and Bean,
 Proc. U.S. Nat. Mus., vol. 62, 1922, p. 36
 (Tobao).

Hemipterus ovenii (not Bleeker) Evermann and Seale, Bull.
 Bur. Fisher., vol. 26, 1906, (1907), p. 82 (Brisson; part).

Depth 3 to 3 $\frac{1}{3}$; head 3 $\frac{1}{2}$ to 3 $\frac{2}{5}$, width
 1 $\frac{9}{10}$ to 2. Snout 2 $\frac{7}{8}$ to 3 in head from
 snout tip; eye 2 $\frac{3}{5}$ to 2 $\frac{1}{2}$, greater
 than snout in young to 1 $\frac{2}{5}$ with age,
 greater than interorbital; maxillary
 reaches to or $\frac{1}{5}$ in eye, expansion 2 $\frac{1}{8}$
 in eye, length 2 $\frac{1}{3}$ to 2 $\frac{3}{5}$ in head

total head length.

Back and above lateral line brownish red, below glazed with silvery. Head dark gold brown, with clear flakes. Iris silvery. Fins rose red. Length 148 mm.
(Steindachner.)

Juan Fernandez.

Singapore, East Indies, Philippines.

37732 U.S.N.M. Indian Archipelago.
Royal Museum of Leiden. Length 151mm.

27605 A.N.S.P. Padang, Sumatra.

✓ Harrison and Miller. Length 207mm.
A.C. ^{H.H.}

When fresh in ^{H.H.} cracks, pale rosy red,
more or less silvery, inclining to white
below. Cheeks rosy. Traces of longitudinal
yellowish bands along sides, one above
lateral line and several below. Scales
below front of lateral line slightly
darker. Fins more or less tinted
orange red and sponous dorsal and
caudal pale orange. Ventral base
sulphur yellow. Iris golden.

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Hoplostethus elongatus (Günther)

Trachichthys elongatus Günther, Cat. Fish. Brit. Mus., vol. 1, p. 10, 1859 (type locality, Great Barrier Island; New Zealand; Australia); Rep. Voy. Challenger, vol. 22, 1889, p. 22, pl. 5, fig. C (type). —

Waite, Rec. Canterbury Mus., vol. 1, no. 1, p. 19, April 25, 1907 (reference). — McCulloch,

Zool. Res. Endeavour, pt. 1, p. 40, December 22, 1911 (note). — Waite, Rec. Canterbury Mus., vol. 1, no. 4, p. 319, December 28, 1912 (reference).

Hoplostethus elongatus McCulloch, Biol. Res. Endeavour, vol. 2, pt. 3, p. 97, July 3, 1914 (descr. in key and note); Rec. Austral. Mus., vol. 14, no. 1, p. 14, February 1923 (Lord Howe Island; Korah Head and off Botany Bay, New South Wales, 26 to 38 fathoms). — McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 139, July 7, 1925 (reference). — McCulloch, Mem. Austral. Mus., no. 5, pt. 1, p. 132, June 29, 1929 (reference).

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Depth $2\frac{4}{5}$; head $3\frac{1}{5}$, width $1\frac{4}{5}$. Snout $5\frac{4}{5}$ in head from snout tip; eye $2\frac{4}{5}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{2}{3}$ in eye, expansion $2\frac{1}{4}$ in eye, length $1\frac{3}{5}$ in head from snout tip; interorbital 3, convex, rather low.

Scales 65 in lateral line (on figure about $60+3$); 9 above, 12 below; predorsal scales very small, extend forward opposite middle of eyes. Suprascapular spine very small, much smaller than preopercular spine. Abdominal scutes 11 or 12.

D. IV, 11, second branched ray $1\frac{1}{2}$ in total head length,

edge minutely or feebly denticulate,
preorbital depth $3\frac{1}{4}$ in eye.

Scales 50 in lateral line; 3 above,
11 below, predorsal extend forward
opposite eye center, 3 rows on cheeks
and preopercle flange naked.

D. X, 9, I, second spine $3\frac{1}{3}$ in total
head length, first ray $2\frac{1}{3}$; A. III, 7, I,
third spine $3\frac{1}{3}$, first ray $2\frac{7}{8}$; least
depth of caudal peduncle $3\frac{1}{4}$; pectoral
 $1\frac{1}{8}$; ventral $1\frac{3}{5}$; caudal forked, each
lobe ending in filament, though fin
otherwise about line as head.

Above rosy, below rose silver. Iris
yellow and rosy, above brown or violaceous.
Broad yellow band wide as pupil
from snout tip and median along side
to caudal base. Lower fins sulphur
yellow, other fins clear rosy. Dorsal
edged yellow. Length 151 mm. (Bleeker.)

A. III, 9, first branched ray $1\frac{7}{8}$; caudal $1\frac{1}{8}$, emarginate behind; least depth of caudal peduncle $2\frac{1}{3}$; pectoral $1\frac{2}{3}$, rays I, 10; ventral 2 in total head.

Black band along each of caudal lobes and another in front of soft dorsal and anal. Length 100 mm. (Günther.)

Lord Howe Island, New South Wales and New Zealand.

179 Synagris balinensis (Bleeker)

Dentex balinensis Bleeker, Naarh. Tijdschr.
Nederl. Indië, vol. 17, 1858-59, p. 155.
Bolebing, northern Bali; Atlas Ichth.
Ind. Néerland., vol. 8, 1876-77, p. 95,
pl. (49) 327, fig 4 (Bali).

? Synagris balinoides Popta, Zweite
Fortsetz. Beschreib. neuen fischarten
Sunda-expedit. ^{Leiden, April} 1918, p. 7. Brang Kee
Fluss, aus Süßwasser.

Depth $3\frac{4}{5}$; head $3\frac{1}{5}$, upper profile
oblique. Snout $3\frac{1}{10}$ in head; eye $2\frac{7}{8}$,
little greater than snout or interorbital;
maxillary reaches $\frac{1}{5}$ in eye, expansion
 $2\frac{3}{5}$ in eye, length $2\frac{2}{3}$ in head from
snout tip; jaws nearly equal; 8 to 10
curved upper front canines, none below;
both jaws with inner band of villiform
teeth, with slightly enlarged outer
row; interorbital low; preopercle

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Hoplostethus melanopterus new species

Depth $1\frac{7}{8}$ to 2; head $2\frac{1}{3}$ to $2\frac{1}{2}$, width 2 to $2\frac{1}{10}$. Snout $3\frac{7}{8}$ to 4 in head from snout tip; eye $3\frac{3}{4}$ to $4\frac{1}{8}$, slightly greater to subequal with snout, $1\frac{1}{8}$ to $1\frac{1}{4}$ in interorbital; maxillary extends obliquely down slightly behind eye, expansion $1\frac{1}{5}$ to $1\frac{1}{3}$ in eye, length $1\frac{1}{4}$ to $1\frac{1}{2}$ in head from snout tip; interorbital $3\frac{1}{5}$ to $3\frac{1}{3}$, well elevated, convex; nasalia minute, close set, directed downward anteriorly, Gill rakers 7 + 16, lanceolate, $1\frac{1}{4}$ in eye; gill filaments $\frac{2}{5}$ gill rakers.

Scales 65 close along and above lateral line to caudal base and 4 more on latter; pores 27 or 28 in lateral line to caudal base;

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12 or 13 scales above lateral line, 27 below, 26 predorsal forward opposite hind eye edge, 4 behind hind maxillary edge on cheeks. Abdominal serrae 11 to 13. Scales with 15 to 18 parallel basal circuli; 9 to 18 wide set, short, strong, apical denticles, 3 to 7 transversely and with age medial largest.

D. IV or V, 13, I or 14, I, last spine $3\frac{3}{8}$ to $3\frac{1}{8}$ in total head length, third ray $2\frac{1}{4}$ to $3\frac{1}{3}$; A. III, 10, I, third spine $3\frac{4}{5}$ to $4\frac{1}{8}$, second ray $2\frac{1}{2}?$ to $2\frac{7}{8}?$; caudal $1\frac{1}{10}$, well forked; least depth of caudal peduncle $3\frac{7}{8}$ to 4; pectoral $1\frac{1}{8}$ to $1\frac{1}{6}$; ventral $1\frac{4}{5}$ to 2.

Brown, with coppery sheen, especially over squamous areas. Iris pale gray to coppery. Inside

gill opening dusky. Vertical fins⁴¹³
very pale or light brown.
Paired fins - dark or blackish
brown.

East Indies, Philippines.
Known by its dark to blackish
paired fins.

2957. D. 5538. Apo Island (C.),
S. 64° W., 7.3 miles (9° 08' 15" N., 123°
23' 20" E.), between Negros and Siquijor.
In 256 fathoms. August 19, 1909.
Length 118 mm.

3077. D. 5527. Balicasag Island
(C.), N. 14° W., 8.2 miles (9° 22' 30" N.,
123° 42' 40"), between Siquijor and
Bohol. In 392 fathoms. August 11,
1909. Length 56 mm.

3478. D. 5528. Balicasag Island.
(C.), N. 15° E., 5.8 miles (9° 24' 45" N.,
123° 39' 15" E.), between Siquijor
and Bohol. In 439 fathoms.
August 11, 1909. Length 158 mm.
Type.

Hepatus bleekeri (Günther).

Acanthurus bleekeri Günther, Cat. Fish. Brit.

Mus., vol. 3, 1861, p. 335 (on Acanthurus

mata Bleeker, n. Cuvier, Nat. Tijds. Ned.

Indië, deel. 7, 1854, p. 432. Batavia). —

Bleeker, Ned. Tijds. Dierk., deel 1, 1863, p. 153.

(Galela, Halmahera). — Klunzinger, Verh.

zool. bot. Ges. Wien, band 21, 1871, p. 509 (Red

Sea). — Weber, Siboga Exped., ⁵⁷band 5, 1913, p.

318 (Macassar).

Acanthurus (Rhomboides) bleekeri Klunzinger,

Fische Roth. Meer., 1884, p. 85 (Koseir).

3563. D. 5533. Balicasag Island (C.), N. 71° E., 9.4 miles ($9^{\circ}27'15''$ N., $123^{\circ}31'48''$ E.), between Cebu and Siquijor. In 432 fathoms. August 19, 1909. Length 35 to 109 mm. Three examples.

2385. D. 5510. Camp Overton Light, S. 68° E., 9.1 miles ($8^{\circ}16'$ N., $124^{\circ}03'50''$ E.), northern Mindanao and vicinity. In 423 fathoms. August 7, 1909. Length 98 mm.

1902. D. 5511. Camp Overton Light, S. 80° E., 15.3 miles ($8^{\circ}15'20''$ N., $123^{\circ}57'$ E.), northern Mindanao and vicinity. In 410 fathoms. August 7, 1909. Length 68 to 73 mm. Three examples.

Holacanthus nicobariensis (Schneider). 799

Chaetodon nicobarensis Schneider, Syst.

Ichth. Bloch, 1801, p. 219, plate 50. Nicobars.

Holacanthus nicobariensis Günther, Cat. Fish.

Brit. Mus., vol. 2, 1860, p. 52 (copied). —

Günther, Cruise of Curacao, Breckley, 1873,

p. 410 (Misol, Moluccas). — Günther, Journ.

Mus. Godeffroy, band 2-3, ^{left} 5-6, 1874, p. 54,
plate 41, fig. B (Samoa, Society Islands). —

Peters, Monatsb. Akad. Wiss. Berlin, 1876,

p. 438 (Mauritius). — Károli, Termesz. Füzetek,

Budapest, vol. 5, 1881, p. 156 (Singapore). —

Day, Fauna British India, vol. 2, 1889, p. 16.

— Vuillant, Nouv. Arch. Mus., Paris, vol. 5

(3 series), 1893, p. 57 (Palawan). — Weber,

Siboga Exped., band 65, 1913, p. 311 (Banda).

Acanthochaetodon nicobariensis Bleeker, Atlas

Ichth. Ind. Néerl., vol. 9, 1878, p. 69, plate (3)

365, fig. 1 (Timor, Ambon, Ceram, Waigiu).

1575. D. 5513. Camp Overton light, ⁴¹⁶
S. 67° E., 10.3 miles ($8^{\circ}16'45''$ N., $124^{\circ}02'48''$ E.), northern Mindanao and vicinity.
In 505 fathoms. August 7, 1909.
Length 77 mm.

2887. D. 5491. Dinata Point (W.), S.
 9° W., 19.3 miles ($9^{\circ}24'$ N., $125^{\circ}12'$ E.),
between Leyte and Mindanao. In 736
fathoms. August 1, 1909. Length 70 mm.

2132 and 2133. D. 5492. Dinata
Point (W.), S. 45° W., 15.2 miles ($9^{\circ}12'45''$ N., $125^{\circ}20'$ E.), between Leyte and
Mindanao. In 735 fathoms. August 1,
1909. Length 65 to 80 mm. Three examples.

2901 to 2904. D. 5494. Dinata Point
(N.), N. 74° W., 4.2 miles ($9^{\circ}06'30''$ N., $125^{\circ}18'40''$ E.), between Leyte and Mindanao.
In 678 fathoms. August 2, 1909.
Length 68 to 74 mm. Four examples.

breast somewhat dusky. ~~Stripe from~~
~~head to above upper caudal base as~~
~~dusky spots~~ Dorsal slaty black, margin
behind first 4 spines very narrowly white,
continued to top of vertical edge or tip of
longest soft ray; from base of last spine
black narrows slightly, leaving lower
portion of soft dorsal including all of
last 3 rays gray; this region with
numerous small dusky spots, these also
on adjacent body and form an interrupted
line across upper portion of caudal peduncle.
Anal like body color, with more speckles
than other soft vertical fins, but rather
obscure. Caudal with broad slaty stripes
on edge of each lobe; produced ray pale
from about middle of fin, not quite
reaching tip; body of fin gray, with
numerous slaty speckles similar to soft
dorsal. All soft vertical fins with slight

2717, 2735, 2738. D. 5201. Limasawa⁴¹⁷
Island (E.), S. 1° E., 14.80 miles (10°
10' N., 125° 04' 15" E.), Sogod Bay,
southern Leyte Island. In 554 fathoms.
April 10, 1908. Length 60 to 145 mm.

3562. D. 5619. March Island (S.) S.
78° E., 7 miles (0° 35' 00" N., 127° 14' 40"
E.), Molucca Passage. In 435 fathoms.
November 27, 1909. Length 62 mm.

4359. D. 5289. Matocot Point, S. 42°
E., 5 miles (13° 41' 50" N., 120° 58' 30" E.),
China Sea, vicinity southern Luzon.
In 172 fathoms. July 22, 1908.
Length 69 mm.

3815^{to}, 3819. D. 5646. North Island
(S.), S. 68° E., 7.5 miles (5° 31' 30" S., 122°
22' 40" E.), Buton Strait. In 456
fathoms. December 16, 1909. Length
78 to 138 mm.

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Holacanthus caudovittatus Günther.

Holacanthus caudovittatus Günther,

Cat. Fish. Brit. Mus., vol. 2, 1860, p. 44.

Mauritius.

Body and fins not elevated. Lower preopercle edge with several small teeth. Scales 45 in lateral line. D. XV, 16; A. III, 18; soft dorsal and anal angular posteriorly; caudal lobes produced. Uniform grayish red when dried. Tail and caudal with black band along upper and lower margins, upper continued along soft dorsal base. Length 158 mm. (Günther.)

Differs from Holacanthus Comarch in its dark bordered caudal and absence of dark lateral bands.

2349 and 2350. D. 5215. Palanog⁴¹⁸
Light, S. $5^{\circ}30' E.$, 8.50 miles ($12^{\circ}31'30'' N.$, $123^{\circ}35'24'' E.$), east of Masbate
Island. In 604 fathoms. April 21, 1908.

4271 to 4275. D. 5124. Pt. Origon
(N.), S. $50^{\circ} E.$, 20.75 miles ($12^{\circ}52' N.$, $121^{\circ}48'30'' E.$); east coast of Mindoro.
In 281 fathoms. February 2, 1908.
Length 59 to 73 mm.

4250. D. 5587. Sipadan Island (W.),
S. $12^{\circ} E.$, 3.8 miles ($4^{\circ}10'35'' N.$, $118^{\circ}37'12'' E.$), Sibuko Bay, Borneo and vicinity.
In 415 fathoms. September 28, 1909.
Length 98 mm.

3133. D. 5373. Jayabas Light (outer),
N. $20^{\circ} E.$, 15 miles ($13^{\circ}40' N.$, $121^{\circ}31'10'' E.$),
Marinduque Island and vicinity. In
338 fathoms. March 2, 1909. Length 48 to
180 mm. Seven examples.

lavender shades. Pectoral rays slightly dusky, membranes hyaline, with lavender shades basally; stripe of dusky from head shows as upper basal dusky spot. Ventral dusky, with slight lavender shade.

~~Two other examples, which we have not located are:~~

444 [1282]. Galvaney Island, Luzon. March 9, 1909. Length 210 mm.

3616 [1251]. Refugio Island, Tausaao, Luzon. March 9, 1909. Length 196^{mm.} to tip of caudal.

17799.

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Length 168 mm.

4755 [1250] Busin Harbor, Burias Island. April 22, 1908. Length 164 mm.

Gray, head and black slaty gray.

Below upper black stripe silvery gray.

Broad black stripe from upper part of eye posteriorly following below lateral line and about middle of upper portion of caudal peduncle; in part at arch of lateral line stripe wide as eye, narrowing at either end; second stripe from behind middle of eye about half diameter of pupil passing straight back and joins broader stripe at its end, then continues to caudal base; third stripe originates under eye, passes obliquely downward across upper cheek, thence backward to caudal; fourth stripe begins on lower posterior edge of preopercle and passes through pectoral base to lower caudal base. Chin and

One example, no data. Length 25 mm.

D. 5297. Matocot Point, S. 50° E.,
5.10 miles (13° 41' 20" N., 120° 58' E.),
China Sea, vicinity southern Luzon.

In 198 fathoms. July 24, 1908.

Length 24 mm.

U.S. N. Mus. No. 93344.

D. 5188. Pescador Island, N. 16° E.,
14 miles (9° 44' N., 123° 14' 20" E.),
Tanon Strait, east coast of Negros.

In 299 fathoms. April 1, 1908.

Length 46 to 136 mm. 17 examples. Type.

1519 to 1523.

D. 5189. Pescador Island, N. 72° E.,
3.30 miles (9° 56' 30" N., 123° 15' E.),
Tanon Strait, east coast of Negros.

In 300 fathoms. April 1, 1908.

Length 67 to 128 mm. 5 examples.

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Genus Gephyroberyx Boulenger

Gephyroberyx Boulenger, Ann. Mag.
Nat. Hist., ser. 7, vol. 9, p. 203, 1902.

(Type Trachichthys darwini Johnson,
monotypic.)

Body rather short or deep, compressed.
Head deep, compressed, ridges of
bones somewhat elevated to form
mucous cavities covered with
membranes. Snout short, rounded
obtusely. Eye large or small. Mouth
oblique, lower jaw protruding. Very
fine teeth in jaws, on vomer and
palatines. Nostrils large, close before
eyes above. Interorbital convex.
Preopercle with spine at angle.

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) Small spine on opercle, which striate.
Suborbital with radiating ridges.
Strong spine on shoulder girdle.
Gill opening large. Gill membranes
free over isthmus. Gill long,
slender, pointed. Branchiostegals 8.
Scales large, rough, irregular,
ctenoid. Abdominal ridge serrated.
^{between ventrals and vent.}
Scales in lateral line large, course
oblique. Dorsal single, with 7 or 8
spines, strong, wide set, median
highest. Soft anal higher forward.
Caudal forked, rudimentary rays
spinous, well developed. Pectoral
long. Ventral with spine and 6 rays.

The species of this genus appear
to have the subcutaneous silvery
gray band along each side of the
lower profile of the body. This

Further they have the upper and lower edges of the caudal fin bordered broadly with brownish.

is very pronounced in the young.

and Renard. Its appearance is quite unlike most members of the ^{Pseudochromis} genus, and suggests certain superficially. The sexes are also variable, the variation of the lateral bands, the dark borders to the caudal and the pale or dark ventral fins quite pronounced.

Great variation in the color pattern is noticeable. Our 2 larger examples both show a broad dusky band embracing and coextensive with the uppermost dark longitudinal line, it crossing obliquely down on caudal peduncle laterally nearly till median. The dark longitudinal lines are variably waved in all the specimens, only all break into spots or dots at the caudal base. Also the 2 large examples differ in that the ventrals are pale and not black as in the third example.

Analysis of Species

a.¹ Abdominal scutes 10.

b.¹ Depth 2 to 2 $\frac{1}{8}$; branched anal rays 10 or 11. philippinus.

b.² Depth 2 $\frac{1}{4}$; branched anal rays 12. darwinii.

a.² Abdominal scutes 14; depth 2 $\frac{1}{5}$ to 2 $\frac{1}{3}$; branched anal rays 11. japonicus.

from snout tip; teeth fine, in narrow bands in jaws, outer row enlarged as 4 to 6 front upper canines and 6 to 8 lower front ones, less distinct in young, with age also several anterolateral short canines; interorbital $3\frac{2}{3}$ to $3\frac{3}{4}$, very slightly elevated and greater median area flattened; preopercle edge entire and membranous with age, both margin of preopercle and preorbital with venules and young with hind preopercle edge very minutely serrate. Gill rakers ⁵⁴ 7 + 5 to 7 short finely spinescent tubercles, $\frac{1}{2}$ of gill filaments, which $1\frac{7}{8}$ in eye.

Scales 47 or 48 in lateral line to caudal base and 1 to 4 more on latter; 4 above, 11 or 12 below, 15 predorsal forward opposite eye center, 3 rows on cheek to preopercle ridge and flange

D. 5266. Matorot Point, S. 22° E., 7 ⁽⁴³²⁾
miles ($13^{\circ}44'36''$ N., $120^{\circ}59'15''$ E.),
Verde Island Passage and Batangas
Bay. In 100 fathoms. June 8, 1907.
Length 75 to 78 mm.

One example. Mompog Island.
March 3, 1909. Length 22 mm.

U.S. Nat. Mus., No. 73345
D. 5516. Point Jagolo Light
(Mindanao), S. 80° W., 9.7 miles ($8^{\circ}46'$
N., $123^{\circ}32'30''$ E.), northern Mindanao
and vicinity. In 175 fathoms. August 9,
1909. Length 104 to 150 mm. Six
examples. Type.

D. 5517. Point Jagolo Light., S.
 83° W., 10.5 miles ($8^{\circ}45'30''$ N., 123°
 $33'45''$ E.), northern Mindanao and
vicinity. In 169 fathoms. August
9, 1909. Length 85 to 105 mm. Five
examples.

(Philippine
Islands)

Pale brown generally, back little darker than sides and lower surface. Four longitudinal dark brown lines from vertical of eye to caudal base, of which all but lower touch hind eye edge; uppermost horizontal from suprascapula and follows along below greater part of arch of lateral line, so that it appears broadened. Upper outer portions of dorsals broadly blackish, behind only extending to point of soft dorsal, dorsal portion of latter finely dotted with dusky brown. Soft anal finely dotted with dusky brown. Caudal with upper and lower borders, including points, broadly dusky brown, median part of fin finely dotted with dusky brown. Paired fins dull brownish.

East Indies, apparently rare in collections, though known to the early naturalists, such as Ruyssch, Valentyn.

D. 5518. Point Tagolo Light, S. ⁴³³64°
W., 8.7 miles (8° 48' N., 123° 31' E.),
northern Mindanao and vicinity.
In 200 fathoms. August 9, 1909.
Length 98 to 150 mm. Eight examples.

D. 5519. Point Tagolo Light, S. 71°
W., 8.7 miles (8° 47' N., 123° 31' 15" E.)
northern Mindanao and vicinity.
In 182 fathoms. August 9, 1909.
Length 90 to 115 mm. 25 examples.

Paratrachichthyinae

Vent more advanced, close behind ventral
bases. Abdominal serrae behind vent.

Paratrachichthys Waite

Depth $1\frac{4}{5}$ ^{to $2\frac{1}{8}$} ; head $3\frac{3}{5}$ ^{to 4} , width $1\frac{2}{3}$ ^{to $1\frac{3}{5}$} . Snout
 $2\frac{3}{4}$ ^{to 3} in head; eye $3\frac{7}{8}$ ^{to 4} , $1\frac{1}{5}$ ^{to $1\frac{2}{5}$} in snout, $1\frac{1}{5}$ ^{to $1\frac{1}{4}$} in interorbital;
 maxillary reaches $\frac{3}{4}$ in snout, $4\frac{1}{8}$ in head;
 interorbital 3, convex. Gill rakers 4+12,
 lanceolate, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{5}$ in
 eye.

Scales 45 ^{to 50} between gill opening and caudal
 base; tubes 43 ^{to 47} in lateral line; 7 ^{to 6} scales
 above lateral line, 23 ^{to 21} below. Scales with
 7 basal radiating striae, 3 to 7 auxiliaries
 sometimes present; apical denticles 20 to 37,
 each with rod like base, often many auxiliary
 denticles; circuli fine.

D. XV, 15, I^{to 17 , I} last spine $1\frac{2}{5}$ ^{to $1\frac{7}{8}$} in head, eighth
 ray $1\frac{2}{5}$ ^{to $1\frac{4}{5}$} ; A. III, 17, I^{to 18 , I} third spine $1\frac{1}{2}$ ^{to $1\frac{3}{4}$} , eighth
 ray $1\frac{1}{8}$ ^{to $1\frac{1}{2}$} , least depth of caudal peduncle $2\frac{1}{4}$ ^{to $2\frac{1}{2}$} .
 caudal $1\frac{3}{4}$ in combined head and body,
 deeply lunate, exerted upper and lower
 points long as rest of fin; pectoral 1 ^{to $1\frac{1}{5}$} in
 head; ventral $3\frac{1}{3}$ in combined head and body,
^{to $3\frac{1}{2}$}

Gephyroberyx darwini (Johnson)

Trachichthys darwini Johnson, Proc. Zool. Soc. London, p. 311, Pl. 32, 1866 (type locality, Madeira). — Goode

and Bean, Oceanic Ichth., p. 188, pl. 56, fig. 207, 1895 (part copied). — Alcock, Journ.

Asiatic Soc. Bengal, vol. 65, pt. 2, p. 314, 1896 (off Ceylon, 320 to 296 fathoms). — Alcock,

Descript. Cat. Fish. Indian Mus., p. 35, 1899 (off Trincomalee, 296 to 320 fathoms).

— McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, p. , Oct. 31, 1916 (4 to 20 miles northeast of Gloucester Head, Queensland, 19 to 35 fathoms).

Trachichthys darwini Günther, Rep. Voy. Challenger, vol. 22, p. 25, 1887 (copied).

Gephyroberyx darwini Regan, Ann. Mag. Nat. Hist., ser. 9, vol. 7, p. 412, 1921 (natal).

in Gilchrist, Fisher. Mar. Surv. South Africa, Spec. Rep. 3, p. 64, 1922 (natal).

Gephyroberyx darwini Sarnard, Ann. South African Mus., vol. 21, pt. 1, p. 361, June 1925 (natal, 148 to 158 fathoms).

Gephyroberyx darwini McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 131, June 29, 1929 (reference).

Gephyroberyx (Trachichthys) darwinii
Gilchrist, Fisher. Mar. Biol. Surv.,
Rep. no. 2, Spec. Rep. no. 3, p. 64, 1921
(1922) (off South Africa, 148 to 158
fathoms).

designation of Dentex furcosus
 Valenciennes for Hemipterus Swainson
 by Jordan and Fesler³ (Rep. U.S. Fish
 Comm., pt. 17, 1889 [1893], p. 1505)
 is unnecessary as Swainson's genus
 is monotypic and rightly a synonym
 of Dentex.

Depth $2\frac{1}{4}$; head $2\frac{2}{5}$, Snout $3\frac{2}{5}$ in head from snout tip; eye 5, $1\frac{2}{5}$ in snout; maxillary nearly vertical, invades $\frac{1}{4}$ in eye, expansion equals eye, length $1\frac{7}{8}$ in head from snout tip; interorbital moderately high; opercle with 17 radiating striae.

Scales 27 (enlarged) in lateral line; body scales small. Cheeks finely scaled. Abdominal serrae 10.

D. VIII, 14, fourth spine 4 in total head length, second branched ray $2\frac{1}{2}$; A. III, 12, second branched ray $3\frac{1}{8}$; caudal $1\frac{2}{5}$, deeply lunate; least depth of caudal peduncle $4\frac{2}{5}$; pectoral $1\frac{4}{5}$, rays 14;

silvery white. Fins all pale brownish, lighter than back. Inside gill opening reddish.

East Indies, Philippines, China, Formosa. Characterized by its plain and more or less silvery coloration, the back slightly contrasted with the belly and upper caudal lobe ending in short filament, evidently broken in most of my specimens.

19775. Cante Province. Length 113 mm.

18667 [1789]. Hinunangan Bay, Leyte.

July 30, 1909. Length 157 mm.

19595. Manila Harbor, Luzon.

January 13, 1908. Length 88 mm.

20450 and 20451. Lato, Luzon. June 19, 1909.

Length 145 to 147 mm.

19926. Parang, Mindanao. May 23, 1908.

Length 150 mm.

ventral rays I, 6, fin $2 \frac{1}{10}$ in
total head length.

Bright red. Back brownish
red, passing to gray on sides.
Belly white. Length 489 mm.
(Johnson.)

Madeira, South Africa, Ceylon,
Queensland.

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naked. Suprascapula with slightly jagged edge. Scales with 7 or 8 basal radiating striae; 46 to 48 apical denticles, small, weak, with 2 or 3 transverse series of basal elements; circuli very fine.

D. X, 9, I, fourth spine $1\frac{2}{3}$ to $1\frac{4}{5}$ in head, first ray 2 to $2\frac{1}{5}$; A. III, 6, I, third spine $2\frac{7}{8}$ to 3, first ray $2\frac{1}{8}$ to $2\frac{2}{5}$; lower caudal lobe $1\frac{1}{10}$ to $1\frac{1}{5}$, fin deeply forked, upper lobe longer and ends in short filament, length of upper lobe $2\frac{7}{8}$ to 3 in rest of body; least depth of caudal peduncle $2\frac{7}{8}$ to 3 in head; pectoral $1\frac{1}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{5}$ to $1\frac{2}{5}$.

Back and sides down till level with vertebral axis warm brown, under surfaces whitish and whole body with silvery white sheen. Iris

Gephyroberyx japonicus (Steindachner and Döderlein)

Trachichthys japonicus Steindachner and Döderlein, Denks. Akad. Wiss. Wien, vol. 47, pt. 1, p. 218, pl. 2, 1883 (type locality, Japan). — Jordan and Snyder,

Annotat. Zool. Japon., vol. 3, p. 63, 1901 (Yokohama).

Gephyroberyx japonicus Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 26, p. 6, 1902 (Suruga Bay). — Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 410, 1912 (Shimizu).

— Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, p. 114, 1913 (Suruga Bay and Tokyo). — Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 239, September 1914 (Misaki).

(439)

Depth $2\frac{1}{5}$ to $2\frac{1}{3}$; head $2\frac{1}{3}$ to $2\frac{1}{2}$, width $2\frac{1}{8}$ to $2\frac{1}{2}$. Snout 4 to $4\frac{1}{8}$ in head from snout tip; eye $3\frac{1}{4}$ to $3\frac{7}{8}$, greater than snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary reaches opposite hind eye edge, expansion $1\frac{1}{4}$ to $1\frac{1}{3}$ in eye, length 1 to $1\frac{1}{2}$ in head from snout tip; interorbital $3\frac{1}{4}$ to $3\frac{1}{3}$, low, convex; nasalia very short, directed forward.

Gill rakers 7 + 16 or 17, lanceolate, twice gill filaments or $1\frac{1}{5}$ in eye.

Scales 50 close along above lateral line to caudal base and 5 more on latter; 30 pores in lateral line to caudal base and 2 more on latter; scales on back and most of body very poorly defined. Abdominal serrae 14. Scales with 9 or 10 long slender

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Holacanthus lamarckii Lacépède.

Holacanthus lamarckii Lacépède, Hist. Nat.

Poiss., vol. 4, 1802, pp. 526, 530. no locality
(Holland Collection). — Cuvier, Hist. Nat.

Poiss., vol. 7, 1831, p. 198, plate 184 (East
Indies)

Holacanthus lamarckii Günther, Cruise of
Curacoa, Brenchley, 1813, p. 410 (Misol,
Moluccas).

Holacanthus lamarckii Bleeker, Atlas Ichth.

Ind. Néerl., vol. 9, 1877, p. 59, plate (9) 371, fig.
4 (Buru, Amboina, Seram, Motta Luat,
Banda).

Genicanthus lamarckii Swainson, Nat. Hist.

Am., vol. 2, 1839, p. 12 (as Lacépède).

apical denticles, in 1 or 2 irregular transverse series; basal parallel striae 8 or 9.

D. VIII, 13, I, third or fourth spine $3\frac{3}{4}$ to 4 in total head length, second branched ray $1\frac{7}{8}$ to $2\frac{1}{3}$; A. III, 11, I, third spine $4\frac{1}{8}$ to $4\frac{7}{8}$, second branched ray $2\frac{1}{2}$; caudal $1\frac{1}{3}$, emarginate; least depth of caudal peduncle $4\frac{1}{2}$ to $5\frac{1}{8}$; pectoral $1\frac{1}{3}$ to $1\frac{3}{4}$, rays I, 14; ventral 2 to $2\frac{1}{8}$ in total head.

Uniform drab or dull brown. Iris brown. Inside mouth blackish. Fins pale brown.

Japan.

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23. Dorsal and anal like body, without
blue lines.

a. Broad creamy band from predorsal
to pectoral, sometimes below includes
whole breast; snout and head
yellowish brown, rest of head smoke
brown variably without or with small
to large yellow spots. conspicillatus

aa. Head without broad creamy band
from predorsal to pectoral base or below.

b. Body largely uniformly dusky,
equally dark above as below; caudal yellow,
with dark median blotch. melanoxoma

bb. Body lighter brown above, line of
demarcation along side strongly contrasted
with lower dark half of body; caudal
uniform yellow. dimidiatus

U. S. N. M., no. 51381. Suruga Bay, Japan. Albatross Collection (3716). Length 110 mm.

U. S. N. M., no. 71198. Shimizu, Suruga. Albatross Collection 1906. Length 100? mm.

inclined on soft dorsal and anal.
septentrionalis

yy. Head and front of trunk with numerous
waved longitudinal somewhat irregular blue
lines, but obsolete on tail; dorsal with
one blue and anal 2. chrysocephalus

xx. Body largely dark or dusky, at least
without blue longitudinal lines or stripes;
head and front at least lighter than body,
uniform to blotched, marbled or spotted
with darker.

z. Dorsal and anal dark purplish, with
many pale blue waved interrupted
horizontal lines; sides of head and
breast lighter than body, uniform to
dark spotted; broad yellow band
from spinous dorsal front to pectoral
base and belly; second yellow band
from middle of spinous dorsal to
caudal peduncle, widening from front.
dubouleyi

Genus Leiogaster Weber

Leiogaster Weber, Siboga Exped., vol. 57, Fische, p. 179, 1913 (Type Leiogaster melanopus Weber, monotypic.)

Bones of head with thin ridges, compartments covered with thin skin. Lower jaw slightly protrudes. Nasalia very small, close, directed down. No abdominal serrae. Pectoral rather low, rays 18 or 19. Vectoral with spine and 6 rays.

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Leiogaster melanopus Weber

Leiogaster melanopus Weber, Siboga
Exped., vol. 57, Fische, p. 180, 1913
(type locality, Halmahera Sea, 798 meters;
Ceram Sea; Flores Sea; 538 to ~~649~~ 649 meters).
— Weber and Beaufort, Fishes Indo
Austral. Archip., vol. 5, p. 218, fig. 60,
1929 (Halmahear Sea, Ceram Sea, Flores
Sea, 567 to 798 meters).

Depth $1\frac{2}{3}$ to $1\frac{4}{5}$; head 2 to $2\frac{1}{2}$, width
 $1\frac{9}{10}$ to $2\frac{1}{4}$, snout $3\frac{1}{4}$ to 4 in head
from snout tip; eye $3\frac{7}{8}$ to 4, 1 in
snout, $1\frac{1}{5}$ to $1\frac{1}{3}$ in interorbital;
maxillary reaches slightly behind eye,
expansion 1 in eye, length $1\frac{1}{5}$ to $1\frac{1}{3}$ in
head from snout tip; bands of fine
teeth in jaws and still finer on
palatines, none on vomer; interorbital
3 to $3\frac{1}{2}$ in head from snout tip, convexly
elevated. Gill rakers 7+16, lanceolate,
3 times gill filaments or $1\frac{1}{5}$ in orbit.

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Scales 65 close along above lateral line to caudal base and 4 more on latter; 30 pores in lateral line; 16 scales above, 26 below, 23 predorsal forward to occiput or about over hind eye edge; 5 rows behind maxillary on cheeks. Scales with 10 to 12 basal circuli; row of 8 or 9 spines apically with 3 or 4 transversely.

D. IV, 14, I, last spine $3\frac{7}{8}$ to $4\frac{1}{3}$ in total head, fourth ray 3? to 4; A. III, 9, I, third spine $4\frac{1}{2}$ to $5\frac{1}{4}$, second ray $3\frac{1}{8}$ to $3\frac{2}{3}$; caudal $1\frac{3}{5}$? to 2?, forked; least depth of caudal peduncle $4\frac{4}{5}$ to 5; pectoral $1\frac{1}{10}$ to $1\frac{2}{3}$; ventral $2\frac{1}{8}$ to $2\frac{1}{3}$.

Light brown, with whitish, gray, silvery and coppery tints, more whitish on head and lower sides. Iris pale. Fins largely pale to whitish, paired ones dark to blackish brown. Inside mouth dusky to blackish.

East Indies, Philippines.

1765 to 1768. D. 5325. Hermanos Island (N.), N. 86° E., 16.75 miles (18° 34' 15" N., 121° 51' 15" E.), off northern Luzon. In 224 fathoms. November 12, 1908. Length 89 to 145 mm.

4350 and 4351. D. 5327. Hermanos Island (N.), N. 55° E., 6.80 miles (18° 31' 30" N., 122° 03' E.), off northern Luzon. In 198 fathoms. November 12, 1908. Length 45 to 48 mm.

The following larval form, without abdominal scutes, pectoral $1\frac{3}{5}$ in total head length and paired fins black, may pertain to the present species:

~~17823. D. 5326. *Abegondo* Light,
N. 10° E., 10.70 miles (lat. $14^{\circ}12'15''$ N., long. $120^{\circ}32'24''$ E.), China Sea.~~

Hermanos Island (N.), N. 69° E., 8 miles (lat. $18^{\circ}32'30''$ N., long. $122^{\circ}01'$ E.), off northern Luzon.

November 12, 1908. In 230 fathoms.
Length 47 mm.

third spine $\frac{1}{2}$ to 3, first ray $1\frac{4}{5}$ to $2\frac{1}{10}$; caudal 1 to $1\frac{1}{3}$, deeply forked, lobes slender and pointed; least depth of caudal peduncle $2\frac{3}{5}$ to $2\frac{7}{8}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{6}$; ventral $1\frac{1}{8}$ to $1\frac{1}{3}$.

Back brown, each scale on back with pale or gray white spot. Lower sides and under surface whitish, though each scale also with lighter or pearly spot. On back 3 narrow whitish transverse bands, about 2 scales in width; first from front of spinous dorsal, second from postero-median dorsal spines and third from last dorsal rays. Iris yellowish white, usually with black or dark blotch above. Fins all pale brownish, both dorsals with dusky brown ~~over~~ membranes, at least basally. Also some dusky brown on several inner caudal membranes.

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Genus Korsogaster Parr

Korsogaster Parr, Bull. Bingham
Oceanogr. Coll., vol. 3, art. 6, p. 9,
December 1933. (Type Korsogaster
nanus Parr, orthotypic.)

Body deep, compressed, ovoid. Head
very large, compressed, cavernous.
Snout short, obtuse. Eye moderate,
advanced. Mouth large, very oblique,
lower jaw protruded. Maxillary
exposed and expanded posteriorly.
Teeth very small, without canines.
Simple minute spines in single series
cover exposed free edges of most
bony crests. Gill openings very wide.
Gill rakers long. Pseudobranchiae
well developed. Small opening behind
fourth gill arch. Branchiostegals 8.
Pyloric coeca about 40. Vent
immediately before ventral fin.
Without normal scales but thickly
covered with small, slender, simple
spines giving skin furry appearance.
Dorsal single, with 5 small spines.
Anal small, with 2 small spines.
Caudal moderately forked, with

22291. River at Port Dupon, Leyte.
March 17, 1909. Length 115 mm.

18620, 18623 [1285]. Taboon Island,
Ragay Gulf, Luzon. March 10, 1909.
Length 140 to 168 mm. Olive and silvery
gray, olive forming oblique streaks on
side of head, more or less parallel
to upper contour; on sides as irregular
blotched bars more or less connected as
network. Vertical fins very pale olive;
dorsal more or less blotched with
translucent reddish, becoming quite
bright on tips of hind spinous rays;
anal yellowish, with paler blotches;
caudal olive, with vermilion shades

rounded lobes and procurrent
spines, main rays 19. Pectoral
moderate, ^{of 17 simple rays.} Ventral with spine
and 6 rays.

Agrees with Leiogaster Weber
in the absence of abdominal
serrae, though differs in its
squamation which is represented
by minute, slender, simple spines.

Case 179 Synagris gracilis (Bleeker)

Dentex gracilis Bleeker, Verhandel.

Kon. Acad. Wetensch. Amsterdam, series
3, vol. 13, 1873, p. 34. Java, Nias, Celebes,
Amboina; Atlas Ichth. Ind. Néerland.,
vol. 7, 1873-76, pl. (35) 313, fig. 5; vol.
8, 1876-77, p. 93 (Nias, Java, Celebes,
Amboina).

? Synagris gracilis Pöhl, Cat. Mus. Godeffroy, no. 9, 1885, p. 29 (Ponapé).
Latilus upeneoides Bleeker, Nat. Geneesk.

Arch. Néerland. Ind. Ind. (Topogr. Batavia),
vol. 2, 1849, p. 523. Batavia.

Dentex ruber (not Valenciennes) Bleeker,
Verhandel. Batavia. Genootsch. (Sparoid.),
vol. 23, 1850, p. 12. (~~Verhandel.~~);

Naturk. Tijdschr. Néerland. Ind. Ind.,
vol. 7, 1854, p. 226 (Macassar); vol. 12,
1856, p. 213 (Nias).

Depth 4; head $3\frac{1}{5}$, profile oblique.
Snout 3 in head; eye $3\frac{1}{3}$, $\frac{1}{10}$ in snout,
greater than interorbital; maxillary

Korsogaster nanus Parr

Korsogaster nanus Parr, Bull.

Bingham Oceanogr. Coll., vol. 3,
art. 6, p. 9, fig. 3, December 1933
(type locality, lat. 25° 56' N., long.
77° 37' W., in 5000 feet).

Depth $2\frac{1}{4}$; head $2\frac{2}{5}$. Snout
 $4\frac{4}{5}$ in head from snout tip;
eye $3\frac{9}{10}$, greater than snout;
maxillary reaches opposite hind
eye edge, expansion $1\frac{1}{4}$ in eye,
length $1\frac{3}{4}$ in head from snout
tip; ^{irregular band of minute teeth in each jaw;} interorbital little greater
than eye, high; ^{large spine at preopercle angle, smaller ones above} Gill rakers
6 + 13.

ant. below.

Dermal papillae scattered
over head and body, conspicuous
as about 27 short vertical rows

Length 154 mm.

(Bleeker.)

East Indies. Known to Bleeker only from the type.

forming axially or along lateral line. Opercle with minute spines and dermal papillae below.

D. $\underline{\underline{V}}$, $\underline{\underline{II}}$, 12, fifth branched ray $2\frac{1}{10}$ in total head length; A. $\underline{\underline{II}}$, $\underline{\underline{I}}$, 10, fourth branched ray $2\frac{2}{3}$; caudal $1\frac{1}{2}$; least depth of caudal peduncle $4\frac{1}{8}$; pectoral $1\frac{2}{3}$; ventral $1\frac{9}{10}$.

Light gray. Caudal, with hind end of caudal peduncle white or colorless. Pectoral gray. Ventral black. Length 18 mm., without caudal.

(Parr.)

Off Bahamas.

$3\frac{1}{5}$ in eye; 3 rows on cheeks to preopercle ridge, flange broadly naked.

D. X, 19, I, first spine $3\frac{3}{5}$, first ray 2; A. III, 7, I, third spine 3, first ray $3\frac{1}{10}$; caudal $1\frac{1}{8}$, well forked, lobes pointed; least depth of caudal peduncle $3\frac{1}{3}$; pectoral $1\frac{1}{10}$; ventral $1\frac{1}{3}$, first ray ends in short filament.

Rosy above, below rose silvery. Iris rose or yellow. Three to 5 broad yellow bands, upper 2 from above eye along back above lateral line to caudal base, lowest from lower hind eye edge back along middle of side and fourth and fifth bands only from gill opening to caudal base medially. Fins clear rose. Dorsals edged yellow and with 2 narrow median longitudinal yellow bands.

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Genus Paratrachichthys Waite

Paratrachichthys Waite. Mem. Austral.
Mus., vol. 4, p. 64, December 23, 1899.
(Type Trachichthys traillii Hutton,
monotypic.)

Body elongate, compressed. Head large, deep, compressed. Snout very obtuse. Eye large. Mouth very oblique, lower jaw protruding. Maxillary large. Teeth five, in villiform bands in jaws, none on vomer. Nostrils large, close before eye above. Opercle striate, hind edge spinulose. Preopercle with spine at angle. Gill opening large. Gill membranes free from isthmus. Branchiostegals 8. Scales small, rough ctenoid. Basal scaly sheath

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of large obtuse scales along each side of dorsal and anal. Caudal base scaly. Lower half of cheeks and occiput scaly, rest of head largely naked. Series of bony serrae behind vent. Lateral line complete, axial on side of body. Dorsal spines 6, graduated up to posterior, all shorter than soft rays. Anal spines 3, small, graduated up to third, all shorter than soft rays. Caudal deeply emarginate or forked. Pectoral low, rays 11. Ventral with spine and 6 rays.

2507. Philippines. Length 70 mm. Type. 459

2670. D. 5378. Manapog Island (E.), N. 38° W., 17 miles ($13^{\circ}17'45''$ N., $122^{\circ}22'$ E.), Marinduque Island and vicinity. In 395 fathoms. March 4, 1909. Length 58 mm.

3003. D. 5376. Jayabas Light (outer), N. 53° W., 18.7 miles ($13^{\circ}42'50''$ N., $121^{\circ}51'30''$ E.), Marinduque Island and vicinity. In 90 fathoms. March 2, 1909. Length 40 mm.

2559, 2560. D. 5241. Manivan Island (N.), S. 68° E., 3 miles ($6^{\circ}50'45''$ N., $126^{\circ}14'38''$ E.), Pujada Bay and vicinity. In 215 fathoms. May 14, 1908. Length 57 to 58 mm.

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Analysis of the species.

a. Geniacanthus. Caudal emarginate or deeply lunate, upper and lower point ending in filament; scales about 45 to 55 in lateral line; dorsal spines 15; soft dorsal and anal more or less pointed.

b. Side with 3 or 4 dark longitudinal bands; predorsal with yellow spot; ventrals yellow or dusky.

bb. Uniform grayish red, caudal bordered dark above and below, caudovittatus ^{Lamarck}
bbb. Side with 15 transverse dark lines; preventral with dark spot; ventrals pale.

melanospilus

aa. Caudal obtuse or rounded convexly behind.

c. Scales with exposed surfaces smoothly and horizontally striated, with or without spinulose border, basal edge lobated; gill membranes broadly joined with isthmus.

d. Holacanthus. Scales large, about 30 to 60 in lateral line.

e. Soft dorsal and anal rounded, without any marginal angle.

1788. D. 5243. Uanivan Island
(N.), S. 66° E., 3.10 miles ($6^{\circ}50'55''$
N., $126^{\circ}14'35''$ E.), Pujada Bay and
vicinity. In 218 fathoms. May 15,
1908. Length 58 to 59 mm. 3
examples.

674
mostly rounded. Ventrals usually
little longer than pectorals.

Among the most handsome of
coral reef fishes the members of this
genus are rather noteworthy for
the richness of their colors, though
frequently gaudy and of beautiful
design. Some are among the most
extreme in contrast of colors of all
fishes.

Besides the numerous species listed
below 2 small examples 10 to 13 mm. long
from Varadero Bay, July 22, 1958,
are evidently the young of some species
of Holacanthus, apparently at present
unidentifiable.

Paratrachichthys prothemius Jordan
and Fowler

Paratrachichthys prothemius Jordan
and Fowler, Proc. U. S. Nat. Mus., vol.
26, p. 9, fig. 1, 1902 (type locality,
Suruga Bay, Japan); — Jordan,
Tanaka, Nyder, Journ. College Sci.
Tokyo, vol. 33, p. 115, fig. 85, 1913
(copied).

Depth $2 \frac{2}{3}$; head $2 \frac{2}{3}$, width $2 \frac{1}{5}$.
Snout 6 in head from snout tip; eye 3,
greatly exceeds snout, greater than
interorbital; maxillary very oblique,
reaches $\frac{2}{3}$ in eye, expansion 2 in eye,
length $1 \frac{3}{4}$ in head from snout tip;
interorbital $3 \frac{1}{4}$, low, broadly convex;
no nasalia. Gill rakers 6 + 15,
lanceolate, twice gill filaments, which
 $1 \frac{3}{4}$ in eye.

Scales 54 close along above lateral line to caudal base and 6 more on latter; pores 28 in lateral line; 12 scales above, 15 below, 25 predorsal forward opposite hind pupil edge; 6 scales on cheeks behind maxillary expansion. Vent large, between ventral fin bases, followed by 9 large abdominal scutes. Scales with 6 parallel basal striae; 3 or 4 rather long apical spines.

D. VI, 13, I, sixth spine $3\frac{1}{2}$ in total head length, third branched ray $2\frac{1}{5}$; A. III, 9, I, third spine 5, third ray $2\frac{3}{5}$; caudal $1\frac{1}{10}$, forked; least depth of caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{3}{5}$; ventral 2.

Dull uniform brownish. Fins pale brown or lighter. Iris pale.

463
Blackish between mandibles
and over branchiostegal
membranes, besides about vent.

Japan.

U. S. N. M., no. 50575. Type:

Sungu Bay.

Albatross Collection D. 3730.

Length 57 mm.

464

Paratrachichthys traillii (Hutton)

Trachichthys traillii Hutton, Ann. Mag. Nat. Hist., ser. , vol. 16, p. 315, 1875 (type locality, Stewart Island); Trans. New Zealand Inst., vol. 8, p. 212, 1876 (Otago harbor). — Arthur, Trans. New Zealand Inst., vol. 17, p. 162, pl. 16, fig. 2, 1885 (Otago harbor). — Günther, Rep. Voy. Challenger, vol. 22, p. 23, pl. 55, fig. A, 1887 (Stewart Island; Otago harbor). — Goode and Bean, Oceanic Ichth., p. 518, 1895 (reference).

Paratrachichthys traillii Waite, Mem. Austral. Mus., vol. 4, p. 65, 1899 (off Newcastle, 42-48 fathoms); Rec. Canterbury Mus., vol. 1, no. 1, p. 19, April 25, 1907 (reference). — Waite and McCulloch, Trans. Roy. Soc. South Australia, vol. 39, p. 463, 1915 (lat. $34^{\circ}50'$ S., long. $133^{\circ}11'E$, 85 fathoms). — McCulloch, Mem. Austral. Mus., vol. 5, pt. 1, p. 132, June 29, 1929 (reference).

Trachichthys macleayi Johnston, Pap.
Roy. Soc. Tasmania, p. 56, 1880 (type
locality, mouth of estuary of Derwent).

• — Günther, Rep. Voy. Challenger, vol.
22, p. 24, 1887 (compiled).

b.² Second dorsal spine alone elongate;
silvery with rosy sheen. nufar.

d.² hemipterus. First dorsal spine, upper
caudal lobe, and first ventral ray end
in long filaments; 5 rows of scales
on cheek above preopercle ridge. filamentosus.

a.² Polysteganus. Frontal scales extend
before eyes above nostrils; upper half
of body with longitudinal rows of
blue dots. caeruleopunctatus.

Cue 13
- name
only

Depth $2\frac{2}{5}$; head $2\frac{7}{8}$, width $2\frac{1}{8}$.
 Snout 5 in head from snout tip;
 eye $3\frac{1}{4}$, greatly exceeds snout,
 $1\frac{1}{5}$ in interorbital; maxillary
 very oblique, reaches opposite hind
 eye edge, expansion $1\frac{1}{2}$ in eye,
 length $1\frac{3}{4}$ in head from snout
 tip; interorbital 3, convex, with 4
 prominent ridges longitudinally;
 opercle with strong radiating striae;
 nasalia strong, short, directed
 forwards. Gill rakers 9 + 18, also
 1 or 2 more as rudiments, lanceolate,
 twice gill filaments or $1\frac{1}{3}$ in orbit.

Scales 80 close along above
 lateral line to caudal base and 4
 more on latter; pores 64 in
 lateral line to caudal base and
 3 more on latter; 16 scales above,
 19 below, 27 predorsal; 5 rows

681
v. Bands on trunk 15 to 25;
suprascapular and postocular
region dusky; no humeral ring.
imperator

vv. Six blue bands on trunk and blue
humeral ring. annularis

cc. Chaetodontops. Scales with exposed
surfaces densely spinulose and basal edge
not lobated; gill membranes very broadly
joined with isthmus.

w. Dark ocular band from neck across
chest; brown part of body finely reticulated
with blue; caudal white. mesoleucus

ww. No dark ocular band.

y. Body with horizontal blue lines or bands,
at least on head and front of body; caudal
yellow.

y. Body with about 7 to 10 longitudinal parallel
well defined blue lines, extend at least to
caudal base, variably horizontal or slightly

on cheek behind maxillary expansion.
Abdominal serrae 12. Scales with
26 basal parallel striae; series of
25 short apical denticles, about 4
transversely.

D. V, I, 12, I, fifth spine $2\frac{1}{2}$ in.
total head length, first branched
ray $1\frac{3}{5}$; A. III, 10, I, third spine
3, first branched ray 2; caudal
 $1\frac{1}{4}$, deeply forked; least depth of
caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{3}{5}$;
ventral 2.

Largely uniform brown. Iris
brown. Fins pale like body.

New Zealand, South Australia.
Tasmania, Victoria, New South
Wales.

and anal reddish orange,
like body; caudal yellow;
paired fins orange. fisheri
dd. Acanthochaetodon. Scales very small,
about 70 to 90 in lateral line; caudal
convexly rounded behind.

s. Soft dorsal and anal pointed; body
mottled with small, irregular, bluish
spots; vertical fins with blue spots. lepidolepis

ss. Soft dorsal and anal rounded; body
with ^{lines} or bands, transverse or longitudinal.

t. Body blue, violet or blackish violet,
without spots; transverse blue or
whitish bands curved.

u. Posteriorly lines or bands arched,
but not circular. semicirculatus

uu. Posteriorly lines arched and
circular, at least in young. micobariensis

tt. Bands or lines inclined upward
posteriorly.

U. S. N. M., no. 39667. New Zealand,
Otago University. Length 188 mm.
This specimen slightly more
elongated than Günther's figure,
though in all other respects in
agreement.

p. No dark ocellus at shoulder.

g. Head largely uniformly dark or with but few dark transverse streaks.

bispinosus

gg. Head and body lighter and all transverse dusky streaks greatly contrasted and distinct, especially on head.

potteri

pp. Dark ocellus or diffuse dark blotch at shoulder or above pectoral.

r. Black blue edged ocellus at shoulder; blue line along dorsal and anal bases.

multispinis

rr. Dark diffuse blotch above pectoral axil; dorsal

469

Family Ostracoberycidae

Body elongately ellipsoid, tapering behind to rather small caudal peduncle. Head little less $\frac{1}{3}$ total length, triangular in profile, largely covered with finely striated bony plates. Snout greatly less than eye, its tip level with middle of eye. Eye little less than very large orbit, its center slightly before middle in total head length. Mouth oblique, cleft laterally, mandible well protruded in front. Maxillary extended obliquely, largely concealed by preorbital. Teeth very small, in both jaws and on palate. Nostrils two, lateral. Preopercle well armed, with large spine at angle. Cheek anteriorly below for small space only part of head exposed. Gill opening large, extends forward opposite front of eye. Isthmus narrow. Gill membranes separate. Pseudobranchiae present. Gill rakers lanceolate. Scales present, only on body and bases of few fins, none

996a

Depth $2\frac{2}{3}$; head 3 to $3\frac{1}{4}$, width $1\frac{7}{8}$ to $2\frac{1}{4}$. Snout $3\frac{1}{8}$ to $3\frac{1}{5}$ in head; eye $3\frac{1}{8}$ to $3\frac{1}{5}$, subequal with snout, $1\frac{1}{8}$ in interorbital; maxillary reaches $\frac{1}{5}$ to $\frac{1}{4}$ in eye, expansion $2\frac{1}{2}$ to $2\frac{3}{5}$ in eye, length $2\frac{4}{5}$ to 3 in head; interorbital 3, broadly convex. Gill rakers 5 + 7, short points, $2\frac{1}{2}$ in gill filaments, which $2\frac{2}{5}$ in eye.

Scales 40 or 41 in lateral line to caudal base and ^{5 or} 6 more on latter; 5 above, 9 below, 20 to 22 forward on predorsal with ^{broad, scaleless} premaxillary groove extending back opposite $\frac{1}{4}$ to $\frac{1}{3}$ in eye, 3 rows on cheeks to preopercle ridge.

on dorsals or anals. Lateral line present, more arched forward than dorsal profile of bank. Paired fins without axillary scales or flap. Two separated dorsals, spinous fin with little longer base, also little higher. Anal like soft dorsal and opposite, spines small. Caudal moderate. Pectoral not quite reaching anal. Ventral smaller than pectoral, spine well developed.

One genus. Apparently related to the Trachichthyidae in general appearance of the head, normal scales, projecting mandible, position of the paired fins and the

presence of three anal spines. ⁴⁷¹

It differs, however, markedly in its ossified finely striated surface bones of the head, more dorsal spines, rounded caudal fin and divided dorsals.

Genus Ostracoberyx Fowler

Ostracoberyx Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 353, 1933 (January 20, 1934). (Type Ostracoberyx dorygenys Fowler, orthotypic.)

Body fusiform, compressed, deepest medially. Caudal peduncle rather slender, compressed. Head large, pointed, compressed. Snout short, pointed in profile, obtuse as seen from above. Eye very large, high, advanced, greatly exceeds snout or interorbital. Mouth large, superior, terminal. Premaxillaries protractile. Maxillary

1 example. Atulayan Bay, Luzon.
June 17, 1909. Length 83 mm.

8647. Biri Channel. June 22, 1909.
Length 544 mm.

15274. Canmahala Bay, Ragay Gulf,
Luzon. March 11, 1909. Length 240 mm.

5543. Cataingan, Masbate. April
18, 1908. Length 233 mm. Back dark
olive green. Top of head more or less
slaty, sides and lower portions paler.
Centers of scales light, edges forming
color, except on upper side where
scale centers irregularly blue and
on middle of side borders of scales
with brownish tinge, forming more

with upper edge ensheathed by narrow preorbital, rather small, reaches below front part of eye and expansion moderate. Lower jaw ~~moderate~~ protruded. Bands of villiform teeth in jaws, on vomer and palatines, though not on tongue. Lower preorbital edge denticulate. Nostrils close together before middle of front of eye, posterior little larger. Preopercle ends in long spine directed back well beyond gill opening and lower edge denticulate. Gill rakers lanceolate, in moderate number. Pseudobranchiae long as gill filaments. Branchiostegals 9. On head only small patch of cheek below eye scaly. Body covered with

474
cycloid, close-set, small, imbricated
scales. Caudal base with small
scales, also few on pectoral
base, otherwise fins naked.
Lateral line complete, well
arched forward, slopes down
behind until midway along
middle of side of caudal
peduncle; tubes small, all
simple. Humeral region with
large finely rugose striate bony
plate. Two dorsals, first
with 9, moderate, rather slender,
bony striated spines; soft
dorsal with as many rays.
Anal with 3 small, slender,
bony graduated spines and soft
fin little shorter than soft
dorsal. Caudal convex behind.
Pectoral rather low, moderate,

475

with 2 simple and 13 branched rays. Ventral inserted below pectoral origin, slender spine little longer than that of preopercle, entire, followed by 5 branched rays. Coloration uniform.

One species.

Ostracoberyx dorygenys Fowler

Ostracoberyx dorygenys Fowler,

Proc. Acad. Nat. Sci. Philadelphia,

vol. 85, p. 353, fig. 105, 1933

(January 20, 1934) (type locality,

Station D. 5503, off northern

Mindanao, in 226 fathoms).

longitudinal bands. Caudal dull
orange. Paired fins dull yellow.

1

Depth $2\frac{1}{5}$; head $2\frac{1}{5}$, width $1\frac{3}{5}$.
 Snout $4\frac{1}{3}$ in head from snout tip;
 orbit $2\frac{1}{2}$, much longer than snout;
 maxillary reaches $\frac{1}{3}$ in orbit,
 expansion $2\frac{2}{3}$ in orbit, length $2\frac{2}{5}$
 in head from snout tip; teeth
 in rather broad villiform bands
 in jaws, 4 or 5 ^{teeth} transversely;
 interorbital 4 in head from
 snout tip, concave; preopercle
 spine little longer than eye;
 denticles along lower preopercle
 edge and lower preorbital
 edge, mostly or at last
 anteriorly, directed forward;
 first denticle on preorbital
 edge conspicuous and spine-like,
 larger than others. Gill rakers
 7 + 15, slenderly lanceolate, $2\frac{2}{3}$
 in orbit; gill filaments $\frac{4}{5}$ of gill

rakers.

Scales 53 in lateral line to caudal base and 3 more on latter; 7 above, 19 below, 12 predorsal to occipital plate; 11 rows vertically on cheeks.

Scales with 4 or 5 basal radiating striae, edge scalloped; circuli rather coarse, broken apically as coarse asperities or granules.

D. IX—I, 8, I, third spine $2\frac{1}{3}$ in total head length, third branched ray $2\frac{3}{4}$; A. III, 7, I, third spine 4, second ray $2\frac{2}{3}$; caudal $1\frac{7}{8}$, truncate behind, corners rounded, convex behind as expanded with age; least depth of caudal peduncle $3\frac{1}{2}$; pectoral $1\frac{1}{2}$; ventral $1\frac{7}{8}$.

Brown, paler or little lighter below in young. Iris all brownish, mostly little lighter than body. Pectoral base usually dark or dark brown with age. Iris light brown. Inside mouth and gill opening brown.

Philippines.

U. S. N. M., No. 93143, D. 5503.

Macabalan Point Light
(Mindanao), S. 31° E., 6.6 miles
(lat. 8° 36' 26" N., long. 124° 36' 08"
E.), northern Mindanao. In
226 fathoms. August 4, 1909.
Length 175 mm. Type.

Family Berycidae

481

Body compressed, oblong or ovate.
Head with large muciferous cavities covered by thin skin. Eyes usually large, lateral. Mouth wide, oblique. Premaxillaries protractile. Maxillary rather large, with supplemental bone. No barbels. Bands of villiform teeth in jaws, none canines, usually on vomer and palatines. Nostrils 2 on each side of snout. Suborbitals narrow, not sheathing cheeks. Opercle usually spinous. Gill membranes separate, free from isthmus. Gill rakers moderate. Gills 4, slit behind fourth. Pseudobranchiae present. Branchiostegals 7 or 8. Lower pharyngeals separate. Vertebrae 24. Pyloric coeca numerous. Scales ctenoid or cycloid, foliate or granular. Cheeks and opercles scaly.

Analysis of Genera

a. Berycinae. Scales moderate or small; teeth villiform in jaws, on vomer and palatines.

b. Scales not forming longitudinal keels; D. spines 4 to 7; A. spines 4.

c. Scales 36 to 51, rugose, with pectinated edges; D. rays 11 to 19; A. rays 12 to 15. Centroberyx.

c.² Scales 65 to 86, spinuliferous; D. rays 13 to 19; A. rays 15 to 30. Beryx.

b.² Scales forming finely serrated longitudinal keels; D. III, 29; A. II, 23. Trachyberyx.

a.² Anoplogastrinae. Scales minute asperities; teeth villiform in jaws with several somewhat larger in lower. Anoplogaster.

Number of <- shaped violet streaks, angle formed in scales of lateral line, about 30 indicated on figure, which also shows dark postocular band and blotch on opercle, besides short oblique dark bar before pectoral base. Length not given, figure 167 mm. long.
 (Steindachner.)

South Africa. This species is not included in Barnard's Marine fishes of South Africa.

483

Genus Centroberyx Gill

Centroberyx Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 238. (Type Beryx lineatus Valenciennes, designated by Jordan, Genera of Fishes, pt. 3, p. 315, 1919.)

Trachichthodes Gilchrist, Marine Investig. South Africa, vol. 2, p. 203, July 8, 1903⁽¹⁹⁰⁴⁾,
(Type Trachichthodes spinosus Gilchrist, monotypic.) (Jordan 1919 wrongly gives "orthotype Beryx affinis Gthr.")

Austroberyx McCulloch, Zool. Res. Endeavour, vol. 1, p. 39, December 22, 1911.
(Type Beryx affinis Günther, orthotypic.)

(Trachichthyoides Woodward 1902 in fossil fishes not involved.)

~~Trachichthodes Jordan, Genera of Fishes, pt. 4, p. 503, 1920. (Type Trachichthyoides spinosus Gilchrist.) (Error.)~~

Body rather deeply ^{ovoid,} compressed,
 Head moderately large, deep.
 Snout short, obtuse. Eye large,
 forward. Mouth oblique, chin
 prominent or little protruded.
 Maxillary reaches below hind
 part of eye. Jaws, vomer and
 palatines with villiform teeth.
 Opercles serrated, each with 2
 spines. Preopercle with more or
 less strongly developed spines on
~~the~~ inner border. Scales large,
 ctenoid, more or less regular.
 Abdomen trenchant, with row
 of slightly enlarged keeled
 scales. Bones of head thin,
 with high ridges and deep
 muciferous cavities between;
 exposed bones rough with raised
 striae. Dorsal with 6 or 7 spines,

of spinous dorsal narrowly sulphur yellow. Axillary ventral scale sulphur yellow.

East Indies, Philippines. A brilliant species, though alcoholic specimens fade to largely silvery white. Unlike Bleeker's figure they show both the long filamentous dorsal spines and the upper caudal filament sulphur yellow.

D. 5442.

~~1526 [1541]~~ 1338, 1341, 1343 to 1346, 1348, 2526 [1541], 9759, 9760 to 9767, 9770, 9771, 10566 to 10568, 10571, 10573 to 10584. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30' 36" N., 120° 11' 06" E.), Luzon.

May 11, 1909. Length 55 to 250 mm.

4228. D. 5655. Cape Tabako, N. 7° E., 13 miles (3° 34' 10" S., 120° 51' 30" E.), Gulf of Boni, Celebes. December 18, 1909. Length 210 mm.

485

graduated posteriorly, and 11 to 14 soft rays. Anal with 4 spines and 12 to 14 rays, base shorter than dorsal base. Caudal forked. Pectoral moderate, low. Ventral with spine and 7 rays.

South Africa, Australia, Tasmania, New Zealand. Though merged with Hoplopteryx Cagarriz 1838, represented by Cretaceous fossils, by Regan 1911, McCulloch's contention that "the recent forms seem to differ in having the opercular bones more strongly armed and in having much smaller scales" would appear to be sufficient generic characters.

Scales with 7 basal radiating striae; 25 to 70 apical denticles, short, with 1 to 4 basal elements; circuli fine.

D. 8, 9, 1, first and second rays elongate filaments of which $1\frac{4}{5}$ to $1\frac{7}{8}$ in combined head and body to caudal base, first spine $1\frac{7}{8}$ to 2 in head, seventh ray $1\frac{1}{4}$ to $1\frac{2}{5}$; A. III, 7, 1, third spine 3 to $3\frac{7}{8}$, sixth ray $1\frac{3}{4}$ to $2\frac{2}{5}$; least depth of caudal peduncle $2\frac{4}{5}$ to $3\frac{1}{8}$; lower caudal lobe $1\frac{1}{8}$ to $1\frac{1}{4}$, fin deeply emarginate, upper lobe $1\frac{3}{4}$ to $3\frac{1}{4}$ in combined head and body to caudal base; pectoral $1\frac{1}{5}$ to $2\frac{7}{8}$; ventral 3, $1\frac{1}{8}$ to $1\frac{1}{4}$ in head in young.

Back pale brown, sides and below whitish, with silvery white sheen. Iris yellowish. Upper edge

Analysis of Species

a.¹ D. VI or VII, 11 to 15; A. IV to VI,
12 to 16.

b.¹ A. IV, 12 to 14.

c.¹ Scales 36 to 39; A. rays
12 or 13. gerrardi.

c.² Scales 42 to 44; A. rays
11 or 12. affinis.

c.³ Scales 47; A. rays 14.
lineatus.

b.² A. VI, 15; scales 51. spinosus.

a.² D. IV, 19; A. IV, 15; scales 44.
delphini.

forward at least to eyes, 4 rows on cheeks to preopercle ridge and flange raised; ventral axillary scale $2\frac{3}{4}$ in fin; caudal largely covered with fine scales.

D. X, 9, I, with spine $1\frac{1}{2}$ in total head length, edges of membranes of spinous fin well notched, first ray $2\frac{1}{3}$; A. III, 7, I, third spine $2\frac{4}{5}$, first ray $2\frac{3}{5}$; least depth of caudal peduncle $2\frac{3}{5}$; pectoral $1\frac{1}{4}$; ventral $1\frac{1}{4}$; caudal $3\frac{1}{4}$ in rest of body, fin lunately emarginate.

Rose red above, below silvery. Broad orange band above middle, along side of body, fading out at caudal peduncle. Second narrow yellowish band begins behind head and extends along dorsal base till opposite end of fin.

487

Centroberyx gerrardi (Günther)

Beryx gerrardi Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 20, p. 238, fig. ^(intercalated)
1887 (type locality, Adelaide, South Australia).

Austroberyx gerrardi McCulloch, Zool. Res. Endeavour, vol. 1, pt. 1, p. 41, pl. 8, 1911.
(off Flinders Island, South Australia, 37 fathoms). ^{December 22,}

Trachichthodes gerrardi Whitley and McCulloch, Trans. Roy. Soc. South Australia, vol. 39, p. 463, 1915 (Great Australian Bight, 45 to 140 fathoms).

— McCulloch, Austral. Mus. Mem., vol. 5, pt. 1, p. 131, June 29, 1929 (South Australia).
_{reference}

Depth $1\frac{7}{8}$ to 2; head $2\frac{1}{2}$ to $2\frac{2}{3}$.
 Snout $4\frac{1}{2}$ in head from snout tip; eye $2\frac{1}{3}$ to $2\frac{3}{4}$, greatly exceeds snout; maxillary reaches $\frac{2}{3}$ in eye, expansion $1\frac{2}{3}$ in eye, length $1\frac{4}{5}$ in head from snout tip; interorbital, about $\frac{3}{5}$ of eye or equals snout, low; bones of head all more or less with serrated edges and 2 flat spines at angle of preopercle ridge. Lower gill rakers 22.

Scales 36 to 39 in lateral line; 6 above, 10 below, 15? predorsal, 3 rows on lower part of cheek. Scales rather coarsely denticulated, outer half of exposed surfaces with smooth ridges ending in marginal teeth. Lateral line axial, complete.

52853 and 52854 A. N. S. P. Luzon, Philippines.

Rev. Joseph Clemens. Length 88 to 155 mm.

1 example. A. N. S. P. Philippines. Commercial
Museum of Philadelphia.

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D. VI, 13, third branched ray
 $1\frac{3}{5}$ in total head length; A.
IV, 12 or 13, second branched ray
 $1\frac{4}{5}$; caudal $1\frac{1}{8}$, deeply forked;
least depth of caudal peduncle
3; pectoral $1\frac{2}{5}$, rays 13;
ventral rays I, 7, fin $1\frac{3}{4}$ in
head.

Colorless, length 200 mm.
(McCulloch.)

South Australia.

caudal base and 5 more on latter; 3 above, 11 below, 8 predorsal to occiput and 6 more forward over eye, 3 rows on cheeks; caudal entirely finely scaled. Scales with 7 or 8 basal radiating striae; 48 to 70 blunt apical denticles, with 8 to 10 transverse series of basal elements; circuli fine.

D. X, 9, I, fifth spine $1\frac{3}{5}$ to $1\frac{7}{8}$ in head, first ray $2\frac{1}{10}$ to $2\frac{1}{2}$; A. III, 7, I, third spine $2\frac{7}{8}$ to $3\frac{2}{5}$, first ray $2\frac{1}{2}$ to $2\frac{3}{5}$; least depth of caudal peduncle $2\frac{4}{5}$ to 3; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$; caudal $3\frac{3}{5}$ in rest of body, forked.

Brown, lighter below. Back with 9 dark brown saddles, usually little less width of interspaces. Iris gray. Fins pale.

India, Siam, Philippines.

490

Centroberyx affinis (Günther)

Beryx affinis Günther, Cat. Fish. Brit. Mus., vol. 1, p. 13, 1859 (type locality, Australia [Warwick = Sydney?]). —

Castelnau, Proc. Linn. Soc. New South Wales, vol. 2, p. 225, 1877 (Sydney); vol. 3, p. (349) 365, 1878 (Port Jackson). —

— Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 20, p. 238, ^(interorbital) text fig. 1, 1887 (Sydney; Hobart). — Ogilby, Ed. Fish. New South Wales, p. 69, ^{pl. 21}, 1893. —

Commerc. Fish and Fisher. Queensland, 1915 (Moreton Bay). — Stead, Ed. Fish New South Wales, p. 48, pl. 17, 1908.

Hoplopteryx affinis Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 5, pl. 1, 1911 (Australia).

Austroberyx affinis McCulloch, Zool. Res. Endeavour, vol. 1, pt. 1, p. 43, fig. 11, ^{December 22,} 1911. (east coast Flinders Island, 60-70 fathoms).

— Waite, Rec. Canterbury Mus., vol. 1, no. 4, p. 318, December 28, 1912 (reference).

490

Centroberyx affinis (Günther)

Beryx affinis Günther, Cat. Fish. Brit. Mus., vol. 1, p. 13, 1859 (type locality, Australia [Warwick = Sydney?]). —

Castelnau, Proc. Linn. Soc. New South Wales, vol. 2, p. 225, 1877 (Sydney); vol. 3, p. (349) 365, 1878 (Port Jackson). —

Castelnau
vol. 3,

Waite, Rec. Canterbury Mus., vol. 1, no. 4, p. 18, April 25, 1907 (reference). — Ogilby, Commerc. Fish and Fisher. Queensland, 1915 (Moreton Bay). — Stead, Ed. Fish New South Wales, p. 48, p. 17, 1908.

Hoploberyx affinis Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, p. 5, pl. 1, 1911 (Australia).

Austroberyx affinis McCulloch, Zool. Res. Endeavour, vol. 1, pt. 1, p. 43, fig. 11, 1911. (east coast Flinders Island, 60 - 70 fathoms, December 22).

— Waite, Rec. Canterbury Mus., vol. 1, no. 4, p. 318, December 28, 1912 (reference).

Trachichthys australis (not Shaw) Castelnau
Proc. Linn. Soc. New South Wales, vol. 3,
p. 364, 1879 (Port Jackson).

vol. 3, p.
(349) 365

Waite, Rec
- 18, Apr
Commerc.

1915 (In
p. 48, no. 17, 1

Trachichthodes affinis Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 139, July 7, 1925 (reference). —

Whitley, Pap. Proc. Roy. Soc. Tasmania, p. 49, 1928 (1929) (DeWent). — Mc

Culloch, Austral. Mus. Mem., vol. 5, pt. 1, p. 131, June 29, 1929 (~~Queensland, Victoria, New South Wales, Tasmania, South Australia, Western Australia, New Zealand~~ reference).

Depth $3\frac{1}{2}$ ($2\frac{2}{3}$ in young), head $2\frac{2}{5}$, Snout $5\frac{3}{4}$ in head from snout tip; eye $2\frac{2}{5}$, greater than snout; maxillary reaches $\frac{4}{5}$ in eye, expansion 2 in eye, length $1\frac{3}{5}$ in head from snout tip; interorbital rather low.

Scales 42 to 44 in lateral line; 6 above, 12 below. Young with coarsely denticulate edges to scales, surfaces almost smooth; with age denticulations much finer and continued back as ridges almost half way across exposed portion of scale. Bones of head in young with edges spinate and surfaces smooth and with but few ridges.

D. VII, 11 or 12, first branched ray $1\frac{2}{3}$ in total head; A. IV, 12,

reaches $\frac{1}{5}$ to $\frac{1}{4}$ in eye, expansion $2\frac{2}{3}$ to $2\frac{4}{5}$ in eye, length $2\frac{1}{2}$ to $2\frac{3}{5}$ in head; teeth in narrow villiform bands in jaws of 5 or 6 irregular rows anteriorly and an outer enlarged row, also 7 or 8 front upper canines; interorbital $4\frac{3}{5}$ to 5 in head, very slightly elevated and greater median portion level; preopercle edge entire; opercle ends in short, flat, blunt spine; preorbital depth $\frac{1}{2}$ of eye. Gill rakers 6 + 7, short tubercles, $2\frac{1}{5}$ in gill filaments, which $2\frac{1}{3}$ in eye.

Scales 40 or 41 in lateral line to caudal base and 1 or 2 more on latter; 4 above, 8 or 9 below, 12 to 15 predorsal forward opposite eye center, 3 rows on cheeks and preopercle flange naked. Suprascapula entire.

length 2; least depth of
caudal peduncle $2\frac{2}{3}$; pectoral
 $1\frac{2}{5}$; ventral $1\frac{7}{8}$.

Length 408 mm. (McCulloch.)

Queensland, New South Wales,
Victoria, Tasmania, South
Australia, Western Australia,
New Zealand. According to
Ogilby its colors are red, with
violet reflections, each longitudinal
series of scales with a large
median spot, golden on back
and paler on sides, silvery
below and forming well defined
bands; Abdominal region dirty
white; Fins ~~and~~ red.

Cuv 129

Synagris nematophorus (Bleeker)

Dentex nematophorus Bleeker, Naturk.
Tijdschr. Nederland. Indië, vol. 5,
 1853, p. 500. Padang, Sumatra; vol. 12,
 1856, p. 213 (Nias); Atlas Ichth.
Ind. Néerland., vol. 7, 1873-76, pl. (13)
 291, fig. 1; vol. 8, 1876-77, p. 90 (Sumatra).
¹/_m Meyer, An. Soc. Españ. Hist. Nat.
Madrid, vol. 14, 1885, p. 15 (North Celebes;
 Manila Bay). ¹/_m Elera, Cat. Fauna
Filipinas, vol. 1, 1895, p. 478 (Luzon;
 Manila Bay).

Synagris nematophorus Günther, Cat.
Fishes Brit. Mus., vol. 1, 1859, p. 379
 (copied).

Depth $2\frac{7}{8}$ to $3\frac{1}{8}$, head 3 to $3\frac{1}{5}$,
 width 2 to $2\frac{1}{4}$. Snout $3\frac{1}{3}$ to $3\frac{1}{2}$ in
 head; eye 3 to $3\frac{1}{5}$, greater than
 snout to subequal with age,
 greater than interorbital; maxillary

494

Centroberyx lineatus (Valenciennes)

Beryx lineatus (Cuvier and Valenciennes)
Cuvier, Règne Animal, vol. 2, ed. 2, p.
151, 1829 (nomen nudum). — Valenciennes,
Hist. Nat. Poiss., vol. 3, p. 226,
pl. 60, 1829 (type locality, Port King
George, New Holland). — Günther, Cat.

Fish. Brit. Mus., vol. 1, p. 13, 1859 (Isle
de France). — Bleeker, Res. Hist. Nat.
Madagascar, Pollen et Van Dam, pt. 4, p.
86, 1874 (reference).

Trachichthodes lineatus Waite and McCulloch,
Trans. Roy. Soc. South Australia,
vol. 39, p. 461, fig. (head above), 1915
(Great Australian Bight, 72 to 140
fathoms). — McCulloch, Austral. Mus.
Mem., vol. 5, pt. 1, p. 131, June 29, 1929
(~~Western Australia, South Australia~~).
reference).

Beryx mülleri Klunzinger, Sitzs. Ber.
Akad. Wiss. Wien, vol. 80, pt. 1, p. 359, pl.
3, fig. 1, 1879 (type locality, King George's
Sound).

Depth $2\frac{3}{5}$; head 3. Snout $4\frac{3}{5}$ in head from snout tip; eye $2\frac{4}{5}$, greatly exceeds snout; maxillary reaches $\frac{3}{4}$ in eye, expansion $4\frac{3}{4}$ in eye, length 2 in head from snout tip; interorbital low.

Scales 47 in lateral line; 7 above, 13 below, 5 rows across cheek to preopercle ridge. Lateral line axial, complete.

D. VIII, 14, first branched ray $1\frac{9}{10}$ in total head length; A. IV, 14, first branched ray $2\frac{1}{5}$; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $1\frac{1}{5}$, rays II, 13; ventral rays I, 7, fin $1\frac{3}{5}$ in total head length; caudal 2 in rest of fish, deeply forked, lobes slender and pointed.

442

Dentex striatus Valenciennes, Hist.
Nat. Poiss., vol. 6, 1830, p. 252. Tranquebar.
Jordan, Madras Journ. Lit. Sci., 1851,
p. 134.

Synagris striatus Day, Fishes of India,
pt. 1, 1875, p. 90 (Vizagapatam); Fauna
British India, Fishes, vol. 1, 1889, p. 526.

Coryphaena striata (Bloch) Day, Fishes of
India, pt. 1, 1875, p. 90 (name in synonymy).

Depth $3\frac{1}{5}$ to 4; head $3\frac{1}{5}$ to $3\frac{1}{3}$, width
 $1\frac{3}{4}$ to $2\frac{1}{8}$. Snout $2\frac{4}{5}$ to $3\frac{1}{5}$ in head;
eye $2\frac{4}{5}$ to $3\frac{1}{4}$, 1 to $1\frac{1}{4}$ in snout;
maxillary reaches opposite eye, expansion
 $2\frac{1}{3}$ in eye, length $2\frac{3}{5}$ to $2\frac{1}{5}$ in head;
teeth in villiform bands in jaws,
outer row enlarged and conic; interorbital
 $3\frac{7}{8}$ to $4\frac{1}{8}$, level; preorbital depth
 $\frac{3}{4}$ of eye. Gill rakers 4+6, short, broad
tubercles.

Scales 44 or 45 in lateral line to

Color reddish, bluish reflection
above in spirits. Length 250 mm.

(Klunzinger.)

Western and South Australia.

no 129 Synagris luteus (Schneider)

Coryphaena lutea Schneider, Syst. Ichth. Bloch, 1801, p. 297, pl. 58. Eastern Sea at Tranquebar.

Dentex luteus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 250 (Pondicherry). ¹ Bleeker, Verhandl. Batavia. Genootsch. (Nal. Ichth. Bengal), vol. 25, 1853, p. 38. ² Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 283 (Orion; Philippines).

Synagris luteus Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 377 (copied).

¹ Day, Fishes of India, pt. 1, 1875, pl. 8, fig. 5.

Synagris lutea Martens, Pruss. Exped. Ost Asien, 1876, p. 387 (Bangkok).

Hemipterus luteus Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 21, fig. 7 (Cavite).

497

Centroberyx spinosus (Gilchrist)

Trachichthodes spinosus Gilchrist,
Marine Investig. South Africa, vol. 2, p.
204, pl. 13, fig. 1, ¹⁹⁰³(1904) (type locality,
Cape Morgan on E. Coast, bearing N. W. $\frac{1}{4}$ W.
distant $6\frac{1}{2}$ miles, 45 fathoms).

— Barnard, Ann. South African Mus.,
vol. 21, pt. 1, p. 363, June 1925 (type).

498

Depth $1\frac{7}{8}$; head $2\frac{1}{2}$. Snout $5\frac{1}{2}$
in head from snout tip; eye $2\frac{9}{10}$,
greatly exceeds snout; maxillary
reaches $\frac{4}{5}$ in eye, expansion
 $1\frac{3}{4}$ in eye, length $1\frac{3}{4}$ in head
from snout tip; interorbital low.

Scales 45 in axial lateral
series to caudal base and about
6 more very small ones on latter;
6 above, 10 below. Scales strongly
ctenoid, striated.

D. VII, 15, first branched ray
 $2\frac{1}{3}$ in total head length; A.
IV, 15, first branched ray $2\frac{4}{5}$;
caudal $1\frac{1}{5}$, forked, small;
least depth of caudal peduncle
3; pectoral $1\frac{2}{5}$, rays I, 12; ventral
rays I, 7, fin 2 in total head
length.

5 + 5, short, low, spinose tubercles,
 $\frac{1}{2}$ of gill filaments, which $2\frac{1}{2}$ in eye.

Scales 43 or 44 in lateral line to
 caudal base and 2 more on latter; 4
 above, 11 below, 12 or 13 predorsal
 forward midway in eye, 3 rows on
 cheeks. Suprascapula with jagged
 edge. Scales with 7 basal radiating
 strial; 36 to 70 apical denticles,
 small, weak, with 1 to 5 transverse
 series of basal elements; circuli very
 fine.

D. X, 9, I, fourth spine 2 to $2\frac{1}{4}$ in total
 head length, first ray $2\frac{1}{4}$ to $2\frac{3}{5}$;
 A. II or III, 7, I, last spine $3\frac{1}{2}$ to $3\frac{3}{4}$,
 first ray $2\frac{1}{5}$ to 3; caudal 1 to $1\frac{1}{8}$,
 well forked, with slender pointed
 lobes, lower slightly shorter and apparently
 neither ending in filament; least depth
 of caudal peduncle $3\frac{1}{3}$ to $3\frac{1}{2}$; pectoral

Length 80 mm. (Gilchrist.)
South Africa;

Though its color not given originally Barnard gives gray for preserved materials and probably red in life.

Depth $3\frac{2}{3}$; head $3\frac{1}{4}$ to $3\frac{1}{3}$, width
2 to $2\frac{1}{10}$. Snout $2\frac{3}{5}$ to $2\frac{4}{5}$ in head
from snout tip; eye $3\frac{1}{4}$ to $3\frac{1}{3}$, $1\frac{1}{4}$ to
 $1\frac{1}{3}$ in snout, greater than interorbital;
maxillary not quite reaching front eye
edge, expansion $2\frac{3}{4}$ to 3 in eye, length
 $2\frac{7}{8}$ to 3 in head; teeth in villiform
band of 5 or 6 irregular rows and
outer slightly enlarged row, also 5
or 6 upper front outer canines; front
band of villiform lower teeth like upper
only not extended over half way back
along each side of mandible, outer
row enlarged all along mandible and
medianly 4 or 5 of teeth slightly
larger; interorbital $3\frac{1}{5}$ to $3\frac{3}{5}$, but
slightly elevated, broadly level;
preopercle edge entire, flange together
with preorbitals, suborbitals and
interorbital, venulose. Gill rakers

500

Centroberyx delphini (Valenciennes)

Beryx delphini Valenciennes, Hist.
Nat. Poiss., vol. 9, p. 454, 1833 (type
locality, From stomach of a dolphin
harpooned by M. Dussumier in the
seas of the Indies, in Lat. 32° S., Long.
 51° N. of Paris); Règne Animal, Cuvier,
Ed. Ill., Poiss., pl. 14, fig. 3, 1839
(type).

— Günther, Cat. Fish. Brit Mus.,
vol. 1, p. 16, 1859 (compiled).

501

Depth $2\frac{1}{5}$; head 3. Snout $3\frac{1}{2}$
in head from snout tip; eye $2\frac{1}{4}$,
greater than snout; maxillary
reaches $\frac{4}{7}$ in eye, expansion $1\frac{1}{2}$
in eye, length $1\frac{1}{2}$ in head from
snout tip; interorbital very low.

Scales 44 in lateral line
to caudal base and 5 more on
latter; 4 above, 24 below. Lateral
line arched [and shown as] little
high along upper side of back,
complete.

D. V, 19, [last 3 shown as
dotted 7], fifth spine equals head
without mandibles, first branched
ray $1\frac{2}{5}$ in total head or equals
fourth spine; A. IV, 15 ~~XXXXXX~~
~~XXXXXX~~ fourth spine 2 in
total head length, first
branched ray $4\frac{1}{4}$; least depth

11336.

7653, San Roque, Leyte. July 29, 1909. Length 155 to 174 mm.

The following are probably the young:

22093, Libuyog, Leyte. July 26, 1909. Length 103 mm.

20736, Balayan Bay (Taal). January 19, 1908. Length 87 mm.

12826, Cavite and San Roque, Masbate. June 27, 1908. Length 95 mm.

of caudal peduncle $2\frac{1}{10}$; caudal
 $3\frac{1}{2}$ in rest of fish, deeply
forked; pectoral $2\frac{3}{4}$; ventral
equals total head, ~~reaches~~
origin opposite pectoral origin.

Rose color above, silvery below.
Fins red. Iris red. (Valenciennes.)

Indian Ocean. No dimensions
are given, though the ^{printed} figure by
Valenciennes is 114 mm long.

439
1 1/2; ventral 1 2/5 to 1 1/2.

Back warm brown, lower sides and below silvery white. Back shows some slightly darker cloudings. Iris golden. Fins all light brown, without traces of markings.

East Indies, Philippines, Formosa.

My examples agree with Bleeker's figure in most every respect, except they do not show the dark blotches along the back. From Synagris mulloides it may be known by the shorter dorsal spines, the fourth of which at least always distinctly over half length of head. The young of the present species are greatly like those of Synagris mulloides and apparently the spinous dorsal is not with so deep notches on the membranes marginally.

503

Genus Beryx Cuvier

Beryx Cuvier, Règne Animal, ed.
2, vol. 2, p. 151, 1829. (Type
Beryx decadactylus Valenciennes,
designated by Jordan and Evermann,
Genera of Fishes, pt. 1, p. 127, 1917.)

Actinoberyx Roule, Bull. Mus. Hist.
Nat. Paris, no. 1, p. 68, 1924. (Type
Actinoberyx jugeati Roule, monotypic.)

504

Body deep, compressed. Head large, bones thin and high ridges with deep muciferous cavities. Snout short, very blunt. Eye large. Mouth oblique, with prominent chin. Maxillary expanded behind. Jaws, vomer and palatines with villiform teeth. Nostrils close together on snout before eye. Preopercle unarmed. Opercle serrated, usually with spine. Gill membranes free from isthmus. Gill rakers long and slender. Air bladder simple. Pyloric coeca numerous. Scales rather large, ctenoid and in regular arrangement. Abdomen trenchant, without enlarged scutes. Lateral line high, concurrent with back, reaches caudal. Dorsal continuous, spines 4 to 6. Anal spines 4, rays 26 to 30. Caudal forked, with 3 or 4 rudimentary

505
rays above and below, Ventral
with 10 soft rays.

Deep sea fishes, with handsome
crimson or scarlet colors. Lowe gives
the following:

Remarkable and striking in appearance,
from their enormous, ^{opal} eyes and brilliant
red and rosy tints, and abundant
principally in the spring and summer,
though scarcely absent from the market
long at any season, they fail not early
to attract the notice of the most
incurious visitor. The two sorts differ
not in season, taste or quality.

They are generally esteemed as good
table fishes; their flesh being white,
moderately firm, flaky, and well
tasted, though possessing no peculiar
delicacy of flavor. They are in
highest season in the autumn; their
usual size is from 12 to 18 inches

long, weighing from 2 to 5 pounds.
They are captured only at enormous
depths; and though I have been
unsuccessful hitherto in obtaining
one of either sort in spawn, yet I
have reason to believe, from certain
observations, that their breeding-
season is the autumn.

Analysis of Speciesa.¹ Scales 59 to 67.b.¹ First dorsal ray and ventral fins not elongated. decadactylus.b.² First dorsal ray and ventral fins greatly elongated. longipinnis.a.² Scales 73 to 86.splendens.

433

can¹²⁹ Syngnys smithii (Steindachner)
Dentex (Heterognathodon) smithii
Steindachner, Sitz. Ber. Akad. Wiss.
Wien, math.-naturwiss. Klasse, vol. 57,
pt. 1, 1868, p. 978, pl. 3, fig. 1. Cape of
Good Hope.

Depth 3; head $3\frac{3}{5}$, width 2. Snout
 $2\frac{7}{8}$ in head from snout tip; eye $3\frac{1}{3}$,
 $1\frac{1}{8}$ in snout, greater than interorbital,
slightly impinging on upper profile;
mandible slightly protrudes; maxillary
reaches eye, expansion $3\frac{1}{4}$ in eye,
length $3\frac{1}{8}$ in head from snout tip;
6 front upper canines, 4 or 5 below.
(subequal in figure); interorbital
slightly concave; preopercle and
suborbital edges entire; preorbital
depth $1\frac{2}{3}$ in eye.

Scales 50 in lateral line; 4
above, 13 below, predorsal extend

Beryx decadactylus Cuvier

Beryx decadactylus (Cuvier and Valenciennes) Cuvier, Règne Animal, ed. 2, vol. 2, p. 151, 1829 (nomen nudum); Hist. Nat. Poiss., vol. 3, p. 222, 1829 (type locality, Madeira). — Lowe, Proc. Zool. Soc. London, vol. 1, p. 142, 1833 (Madeira). — Valenciennes, Hist. Nat. Canaries, vol. 2, pt. 2, p. 13, 1836-44 (Teneriffe). — Lowe, Trans. Zool. Soc. London, vol. 3, p. 1, 1839 (Madeira). — Sünther, Cat. Fish. Brit. Mus., vol. 1, p. 16, 1859 (compiled). — Steindachner, Sitzb. Ber. Akad. Wiss. Wien, vol. 51, pt. 1, p. 399, 1865 (Santa Cruz, Teneriffe); vol. 56, pt. 1, p. 603, pl. 1, 1867 (Santa Cruz). — Martens, Preuss. Exped. Ost Asien, vol. 1, p. 385, 1876 (Madeira). — Steindachner and Döderlein, Denks. Akad. Wiss. Wien, vol. 47, p. 220, 1883 (Tokyo). — Günther,

Rep. Voy. Challenger, vol. 22, p. 33, 1889
 (off Iriomote, 345 fathoms). —
Vinciguerra, Atti Soc. Ital. Sci. Nat.,
 vol. 34, p. 313, 1892 (Canaries). —
Goode and Bean, Oceanic Ichth., pp.
 175, 518, 1895 (copied). — Jordan
 and Evermann, Bull. U. S. Nat.
 Mus., no. 47, pt. 1, p. 844, 1896
 (copied). — Ishikawa and
Matsumura, Prelim. Cat. Fish. Mus.
 Tokyo, p. 58, 1897. — Jordan and
Garman, Mem. Mus. Comp. Zool., vol. 24, pl. 3,
 p. 383, 1899 (reference).
Fowler and Bean,
Fowler, Proc. U. S. Nat. Mus., vol. 26,
 p. 3, 1902 (copied). — Vaillant,
Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische,
 p. 395 (reference).
 1906

25° 24' 25" W., in 550 meters). — Fowler,
 Occas. Pap. Bishop Mus., vol. 8, no. 7, p.
 376, 1923 (Honolulu); Mem. Bishop Mus.,

509

Rep. Voy. Challenger, vol. 22, p. 33, 1889
(off Iwohima, 345 fathoms). —
Vinciguerra, Atti Soc. Ital. Sci. Nat.,
vol. 34, p. 313, 1892 (Canaries). —
Goode and Bean, Oceanic Ichth., pp.
175, 518, 1895 (copied). — Jordan
and Evermann, Bull. U. S. Nat.
Mus., no. 47, pt. 1, p. 844, 1896
(copied). — Ishikawa and
Matsumura, Prelim. Cat. Fish. Mus.
Tokyo, p. 58, 1897. ✓ Jordan and
Snyder, Annot. Zool. Japon., vol. 3,
p. 62, 1901 (Yokohama). — Jordan and
Fowler, Proc. U. S. Nat. Mus., vol. 26,
p. 3, 1902 (copied). ✓ — Vaillant,
Res. Camp. Sci. Monaco, vol. 52, p. 131,
1919 (Azores, Lat. $37^{\circ}39'45''$ N., Long.
 $25^{\circ}24'25''$ W., in 550 meters). — Fowler,
Occas. Pap. Bishop Mus., vol. 8, no. 7, p.
376, 1923 (Honolulu); Mem. Bishop Mus.,

Thalassidroma (Maclean)

Tokyo, p. 5
Snyder, Am
p. 62, 1901
Fowler, Proc
p. 3, 1902
Res. Camp.
1919 (Izores
25° 24' 25" W
Ocean Pacific

570

vol. 10, p. 96, pl. 5 C, 1928 (Honolulu).
— McCulloch, Austral. Mus. Mem.,
no. 5, pt. 1, p. 130, June 29, 1929
(Victoria, Bass Strait, Japan,
Atlantii). ✓ — Schmidt, Trans. Pac.
— Jordan, Evermann, Clark, Rep. U. S. Comm. Fisher., 1928
(1930), pt. 2, p. 234 (reference).

Beryx splendens (not Lowe 1833)
Lowe, Cambridge Philos. Trans., vol.
6, pl. 3, 1838 (not description)
(Madeira).

Beryx borealis Düben and Koren,
Sverg. Vet. Akad. Handl. Stockholm,
p. 33, pl. 2, 1844 (type locality,
Börnæs, near Bergen).

vol. 10, p. 96, pl. 5 C, 1928 (Honolulu).

— McCulloch, Austral. Mus. Mem.,

no. 5, pt. 1, p. 130, June 29, 1929

(Victoria, Bass Strait, Japan,

Atlantic). — Schmidt, Trans. Pac.

Comm. Acad. Sci. U. S. S. R., vol. 2, p. 37,

1931 (Tokyo).

Beryx splendens (not Lowe 1833)

Lowe, Cambridge Philos. Trans., vol.

6, pl. 3, 1838 (not description)

(Madeira).

Beryx borealis Düben and Koren,

Sverg. Vet. Akad. Handl. Stockholm,

p. 33, pl. 2, 1844 (type locality,

Börnæs, near Bergen).

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~~1/2~~ ¹ ~~habitat~~, Ceylon (Sri Lanka)
Ref. 1721, p. 178.

(Victoria,
Atlantici) ✓

Comm. Acad.

931 (Tokyo).

Beryx spl

Depth 2 to $2\frac{3}{5}$; head 2 to 3, width $1\frac{4}{5}$ to 2. Snout $2\frac{4}{5}$ to $4\frac{7}{8}$ in head from snout tip; eye $2\frac{1}{5}$ to $2\frac{2}{3}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{4}{5}$ in eye, expansion $1\frac{1}{2}$ to $1\frac{4}{5}$ in eye, length $1\frac{4}{5}$ to 2 in head from snout tip; interorbital 4 to $4\frac{1}{3}$, low, slightly convex. Gill rakers 6 or 7 + 16 to 19, 2 to $2\frac{1}{5}$ in eye, twice gill filaments.

Scales 52 to 57 in lateral line to caudal base and 7 to 10 more on latter; 9 or 10 above, 17 to 19 below, 25 to 32 predorsal forward opposite eye center, 4 or 5 rows on cheek.

Scales with 8 slight basal marginal undulations; row of 18 to 20 apical denticles, median pair little enlarged; circuli basal, five

D. IV, 18, I or 19, I, first branched

(Manado, Celebes), p. 361 (Batjan), deel
 8, 1855, p. 296 (Ternate), p. 393 (Amboina),
 p. 463 (Manado); deel 10, 1856, p. 360 (Ternate),
 deel 11, 1856, p. 81 (Malang, Java), p. 95
 (Banda), p. 385 (Kajeli, Borneo), p. 489
 (Ceram); deel 12, 1856, p. 193 (Ternate), p.
 293 (Boeling, Bali); deel 13, 1857, p. 372
 (Sangi Islands), p. 384 (Batjan), p. 388
 (Timor deli), p. 478 (Karangbolong), p. 479
 (Prigi, Java); deel 14, 1857, p. 245 (Prigi);
 deel 15, 1858, p. 200 (Goram); deel 16, 1858, p.
 209 (Batjan); deel 17, 1858-59, p. 173 (Boeling,
 Bali); deel 18, 1859, p. 354 (Bavem); deel 19,
 1859, p. 331 (Patjitan, Java), p. 333 (Karang-
 bolong); deel 20, 1859-60, p. 203 (Karangbolong),
 p. 206 (Boeling, Bali). — Bleeker, Niet. Soc.
Sci. Ind. Néerl., vol. 1, no. 3, 1856, p. 4 (Manado),
 p. 8, 9 (Macassar); vol. 1, no. 5, 1856, p. 6 (Amboina);
 vol. 2, no. 7, 1857, p. 5 (Amboina); vol. 3, no. 4,
 1857-58, p. 3 (Manado, Ternate); vol. 5,

ray $1\frac{1}{2}$ to $1\frac{2}{3}$ in total head length; A. III, 27, I to 29, I, first branched ray 2 to $2\frac{1}{5}$; caudal 1 to $1\frac{1}{5}$, forked, lobes slender and pointed; least depth of caudal peduncle 3 to $3\frac{1}{8}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{3}$, rays I, 16 or I, 17; ventral rays 10 to 11, fin $1\frac{1}{2}$ to $1\frac{3}{4}$.

Largely uniform brown. Iris pale or warm brown. Fins brown, darker basally.

Circumtropical.

Hepatus fuliginosus (Lesson).

Acanthurus fuliginosus Lesson, Voy.

Cochin, Zool., tome 2, pt. 1, 1830, p. 149,

plate 27, fig. 2. Qualan; Offack Bay, Wagiu.

Hepatus fuliginosus Fowler, Bishop Mus.

Bull., no. 22, 1925, p. 28 (Honolulu). —

Fowler and Ball, L.C., no. 26, 1925 (1926), p.

18 (Wake Island).

Chaetodon nigricans (non Linnaeus) Bloch,

Naturg. Anst. Fisch., band 3, 1787, [p. 82] plate

203 (verschiedenen weltgegenden).

Acanthurus matoide Valenciennes, Hist. Nat.

Pois., vol. 10, 1835, p. 204. Qualan. — Bleeker,

Nat. Tijds. Ned. Indië, deel 3, 1852, p. 161

(Timor Kupang), p. 740 (Macassar); deel 4,

1853, p. 93 (Ambonia); deel 5, 1853, pp. 319,

320 (Ambonia); deel 6, 1854, p. 204 (Timor

Kupang), p. 457 (Ambonia), p. 517 (Alakan),

p. 518 (Cocca Island); deel 7, 1854, p. 38

(Cocca Island), p. 227 (Macassar), p. 228

U. S. N. M., no. 23316. Fayal, Azores.
F. B. McGuire. Length 432 mm.

A. N. S. P., no. ———. Honolulu.
Bishop Museum. Length.

960

Anal with longitudinal bands,
only seen by transmitted light.
Caudal lobes mottled with tawney
along 3 or 4 outer rays, base with
pale, white in life. Pectoral black,
darkest on upper rays.

... sand. November 9, 1908. Length 3.
5340 mm. Body uniform, bistré
without stripes or lines. Ventrals, 4
light tinge of yellowish brown on
ending. No black shoulder marks.
Bronze spot above angle of $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
Head and breast under

Beryx longipinnis Barnard

Beryx longipinnis Barnard, Ann.
 Mag. Nat. Hist., ser. 9, vol. 15, p.
 504, 1925 (type locality, Off Saldanha
 Bay; Natal coast; 200 to 300 fathoms),
 Ann. South Afric. Mus., vol. 21, pt. 1,
 p. 363, June 1925 ~~Off Saldanha Bay~~
 pl. 15, fig. 3,
~~Natal coast, 200 to 300 fathoms~~
 (see above).

Depth $2\frac{1}{5}$; head $3\frac{1}{3}$. Snout $4\frac{4}{5}$ in head from snout tip; eye $2\frac{1}{4}$ to $2\frac{1}{3}$, greatly exceeds snout; maxillary reaches $\frac{1}{2}$ to $\frac{2}{3}$ in eye, expansion 2 in eye, length 2 in head from snout tip; interorbital $\frac{2}{3}$ of eye, rather low; strong, horizontally projecting, backwardly curved spine on preorbital, bearing on front edge smaller accessory spine; supraorbital and interorbital ridges serrulate, each of latter with short, stout spine above front third of eye.

Scales 60 to 62 in lateral line, 10 above, 20 below.

Scales striate and denticulate, usually with smooth median longitudinal groove. Preopercle,

no 129

450

Synagris tolu (Valenciennes)

Sentex tolu Valenciennes, Hist. Nat.

Poiss., vol. 6, 1830, p. 249. Pondicherry;

New Guinea. ¹/₂₇ Bleeker, Verhandl. Batavia.

Genootsch. (Nat. Ichth. Bengal), vol. 25,

1853, p. 38; Naturk. Tijdschr. Nederl.

Indië, vol. 3, 1852, p. 52 (Singapore);

Atlas Ichth. Ind. Néerland., vol. 7, 1873-76,

pl. (37) 315, fig. 13; vol. 8, 1876-77, p. 88

(Sumatra, Banca, Java, Sumbawa, New

Guinea). ¹/₂₇ Fowler, Journ. Acad. Nat. Sci.

Philadelphia, series 2, vol. 12, 1904, p. 527

(Padang); Mem. Bishop Mus., vol. 10,

1928, p. 220 (copied Day); Proc. Acad.

Nat. Sci. Philadelphia, 1929 (1930), p. 645

(Padang material).

Synagris tolu Klinzinger, Verhandl. zool.

botan. Gesell. Wien, vol. 20, 1870, p. 767

(Red Sea). ¹/₂₇ Day, Fishes of India, pt. 1,

1875, p. 91, pl. 23, fig. 6 (types); Fauna British

subopercle and suprascapula
striate and serrate.

D. IV, 18 or 19, fourth spine
 $1\frac{3}{5}$ in ^{total} head, first ray $2\frac{1}{5}$ in
combined head and body to
caudal base; A. IV, 27, first
ray $1\frac{3}{5}$ in total head; caudal
1, well forked; least depth of
caudal peduncle $2\frac{7}{8}$; pectoral
 $1\frac{1}{10}$, rays 15; ventral rays I, 10,
first 3 rays reach end of
caudal, following shorter.

Silvery, with salmon or
coral-red tinge, deepest on
back. Fins pale salmon.
Length to 360 mm. (Barnard.)
South Africa.

D. 5358, 1831 and 1832, Sandakan
Light, S. 34° W, 19.7 miles ($6^{\circ} 06' 40''$
N., $118^{\circ} 18' 15''$ E.), Jolo Sea. January 7,
1909. Length 160 to 175 mm.?

Beryx splendens Lowe

577

Beryx splendens Lowe, Proc. Zool.
Soc. London, 1833, p. 142, 1833 (type
locality, Madeira); Cambridge Philos.
Trans., vol. 6, p. 197 (not pl. 3), 1838
(Madeira); Fishes of Madeira, pt. 2,
p. 47, pl. 8, 1842 (Madeira). — Günther,
Cat. Fish. Brit. Mus., vol. 1, p. 16,
1859 (Madeira). — Steindachner, Sitzb.
Ber. Akad. Wiss. Wien, vol. 56, pt. 1,
p. 604, 1867 (Teneriffe). — Martens,
Preuss. Exped. Ost Asien, vol. 1, p. 385,
1876 (Madeira). — Günther, Ann. Mag.
Nat. Hist., ser. , vol. 1, p. 485, 1878
(“Tokai” [=Tokyo]). — Hilgendorf, Sitzb.
Ber. Naturf. Fr. Berlin, p. 78, 1879
(Japan). — Günther, Rep. Voy.
Challenger, vol. 1, p. 3, 1880 (Madeira).
— Steindachner, Denks. Akad. Wiss.
Wien, vol. 47, pt. 1, p. 221, 1883 (Tokyo).
— Günther, Rep. Voy. Challenger, vol. 22,

p. 33, 1889 (copied). — Vinciguerra,
Atti Soc. Ital. Sci. Nat., vol. 34, p.

313, 1892 (Canaries). — Goode and

Bean, Oceanic Ichth., p. 176, pl. 53, fig.

^{lat. 35°49'36"N, lat. 74°34'45"N, long. 24°24' fathoms}
197, 1895 (~~reference~~). — Jordan and

Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 1, p. 844, 1896 (copied). — Jordan

^{Garnaud, Mem. Mus. Comp. Zool., vol. 24, p. 384, 1899 (reference)}

and Snyder, Annot. Zool. Japon., vol.
3, p. 62, 1901 (Yokohama). — Jordan

and Fowler, Proc. U. S. Nat. Mus.,
vol. 24, p. 4, 1902 (Yokohama and off

Tokyo Bay). — Snyder, Proc. U. S.
Nat. Mus., vol. 42, p. 410, 1912 (Misaki).

— Jordan, Tanaka, Snyder, Journ.

College Sci. Tokyo, vol. 33, p. 114, 1913
(Tokyo; Yokohama). — McCulloch,

Austral. Mus. Mem., no. 5, pt. 1, p. 130,
June 29, 1929 (Victoria; Bass Strait).

— Schmidt, Trans. Pac. Comm. Acad.
Sci. U. S. S. R., vol. 2, p. 37, 1931

(Tokyo; Misaki). — Anonymous,

Illustrat. Jap. Aquat. Plants and
Animals, vol. 1, pl. 23, fig. 1, 1931.

(520)

Depth $2\frac{3}{5}$ to $2\frac{3}{4}$; head $2\frac{3}{5}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{8}$. Snout $4\frac{3}{4}$ to 5 in head from snout tip; eye $2\frac{3}{4}$ to $2\frac{7}{8}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{3}{5}$ to $\frac{2}{3}$ in eye, expansion $1\frac{3}{4}$ to $1\frac{7}{8}$, length $1\frac{7}{8}$ to 2 in head from snout tip; interorbital $4\frac{1}{5}$ to 5, low, nearly level. Gill rakers 6 + 20, lanceolate, equals gill filaments which $2\frac{1}{2}$ in eye.

Scales 63 or 64 in lateral line to caudal base and 10 to 12 more on latter; 8 above, 17 below, 33 predorsal forward opposite eye center, 6 rows on cheeks behind maxillary. Scales with 88 basal circuli. Lateral line complete, distinct.

D. V, 13, I or V, 14, I, first branched ray $1\frac{7}{8}$ to 2 in total head length; A. III, 25, I to 27, I, first

iii. Broad white crescent below eye; white line along dorsal and anal bases, widening posteriorly.

glaucopareius

iv. Tail with large, naked, rhombic, red-area before and including caudal spine.

achilles

aa. Body with pale or dark cross bands.

v. White transverse cross bands and usually another across tail; tail and soft vertical fins with pale spots.

guttatus

vv. Five black transverse bands, first passing through orbit.

triosteus

~~Fowler and Bean~~
II. Harpurina, new subgenus. Type Hepatus nubilus ~~Fowler and Bean~~, new species. Dorsal spines 6 or 7; last dorsal and anal rays longest; scales rather large.

nubilus

521

branched ray $2 \frac{1}{3}$ to $2 \frac{1}{2}$; caudal
 $1 \frac{1}{8}$ to $1 \frac{1}{6}$, deeply forked, lobes
sharply pointed; least depth of
caudal peduncle $3 \frac{1}{2}$ to $3 \frac{7}{8}$;
pectoral $1 \frac{1}{3}$ to $1 \frac{2}{5}$; ventral $1 \frac{4}{5}$ to
 $1 \frac{7}{8}$.

Uniform reddish brown, with
silvery reflections more or less below.
Iris pink. Fins all pale brownish.
Western North Atlantic,
Madeira, Canaries, Japan,
Victoria,

x. Pectoral uniform dark brown; edges of soft dorsal and anal narrowly bluish, fins otherwise without dark bands; body without blue longitudinal lines.

nigrofuscus

? xx. Pectoral dusky, terminally third pale yellowish; dorsal and anal with 6 to 9 dark longitudinal bands; body with numerous blue, wavy, longitudinal lines.

maculiceps

? bb xx. Whitish ring around mouth or around lower jaw.

s x. Tail without large, naked, rhombic, ^{red} area ^{and including} before caudal spine. ~~about~~
~~inclination same~~

xx. No white crescent below eye; fins uniformly dark or like body.

v. Opercular edge white.

atrinus

uu xx. Opercular edge black.

leucostemon

U. S. N. M., no. 38836. Tokyo market.
Educational Museum of Tokyo.

Length 295 mm.

U. S. N. M., no. 10213. Canaries.
Vienna Museum. Length 392 mm.

U. S. N. M., no. 44676. Lat. $35^{\circ}49'30''$
N., Long. $74^{\circ}34'45''$ W., 424 fathoms.
Albatross Collection (2415). Length
340 mm.

U. S. N. M., no. 44921. Japan.
Government of Japan. Length 500 mm.

U. S. N. M., no. 57570. Japan.
P. L. Jouy. Length 530 mm.

U. S. N. M., no. 71267. Tokyo
market. Albatross Collection. 1906.
Length 240 mm.

mmmm. Brown, with 20 or more blue longitudinal lines, about 10 across head; soft dorsal and anal with 6 or 7 - dark longitudinal lines and pale blue basal line.

bleekeri

mmmm. Dark brown with very many fine rather regular bluish longitudinal lines.

variens

mm. Black spot at base of last dorsal and anal rays; very numerous or fine longitudinal blue lines.

o. White band transversely at caudal base; anal line along and within margin; posterior half of pectoral yellowish.

grammoptilus

oo. Caudal without white basal band; anal uniformly dark; pectoral uniformly dusky.

lineolatus

cc. Black or yellow blotch at shoulder or superiorly on gill opening.

Genus Trachyberyx Roule

Trachyberyx Roule, Bull. Inst. Océanogr. Monaco, no. 546, p. 2, November 25, 1929. (Type Trachyberyx barrettoi Roule, monotypic.)

Body compressed, ovoid. Head large, deep. Snout short. Eye moderate, advanced, high. Mouth terminally superior, lower jaw protruding. Maxillary nearly vertical, reaches below eye. Cardiform teeth in jaws, 3 or 4 rows transversely in front. Scales moderate, ctenoid, with strong serrated spines forming longitudinal keels, parallel, horizontal. Lateral line indistinct, as series of median

lateral axial pores, ~~also~~
dorsal with 3 spines and 29 rays.
Anal with 2 spines and 23 rays.
Caudal damaged. Pectoral low,
reaches anal. Ventral with
spine and 6 rays, ~~inserted~~ inserted
before pectoral.

Known by its nearly vertical
mouth, low nape, prominent
throat, ventral insertion nearly
jugular and reduced dorsal
and anal spines.

Cmel²⁹

Synagris ovenii (Bleeker)

Sentax ovenii Bleeker, Natuurk. Tijdschr.
Nederl. Indië, vol. 7, 1854, p. 246, Macassar,
Celebes; Atlas Ichth. Ind. Néerland.,
vol. 8, 1876-77, p. 86, pl. (50) 328, fig. 5
(Celebes).

Synagris ovenii Günther, Cat. Fishes
Brit. Mus., vol. 1, 1859, p. 375 (copied).

Hemipterus ovenii Jordan and Seale,
Bull. Bur. Fisher., vol. 26, 1906 (1907), p.
21 (Cavite). $\frac{1}{m}$ Evermann and Seale, Bull.
Bur. Fisher., vol. 26, 1906 (1907), p. 82
(Bulan). $\frac{1}{m}$ Jordan and Richardson,
Mem. Carnegie Mus., vol. 4, no. 4, 1911, p.
185 (Tabao, Formosa).

? Hemipterus ovenioides Popta, Zool.
Meded. Leiden, vol. 6, 1921, p. 204, Sunda
Islands.

525

Trachyberys barretoii Roule

Trachyberys barretoii Roule, Bull. Inst. Océanogr. Monaco, no. 546, p. 2, November 25, 1929 (type locality, Madeira).

Depth $2\frac{1}{2}$; head $2\frac{4}{8}$. Snout 5 in head from snout tip; eye 3, greater than snout; maxillary reaches $\frac{1}{2}$ in eye, expansion $1\frac{1}{2}$ in eye, length $1\frac{4}{5}$ in head from snout tip; suborbital low. ~~head~~

Scales 49 in lateral line; horizontal keels most prominent on abdomen.

D. III, 29, first branched ray $1\frac{3}{4}$ in total head length; A. IV, 23, first branched ray $1\frac{3}{4}$; least depth of caudal peduncle $3\frac{3}{5}$; pectoral rays I, 20, fin $1\frac{1}{3}$ in total head length; ventral $1\frac{2}{5}$, rays I, 6.

Length 153 mm. (Roule.)

Madagascar. Color not given.

526

Genus Anoplogaster Günther

Anoplogaster Günther, Cat. Fish. Brit. Mus., vol. 1, p. 12, 1859. (Type Hoplostethus cornutus Valenciennes, monotypic.)

Body compressed, deep. Head large, bones thin and muciferous cavities large. Muzzle short, rounded, not protruding. Eye large. Mouth cleft wide, oblique, chin prominent. Teeth villiform, in bands in jaws, with several larger ones in lower jaw. Palatines toothless. Preopercle entire. Preopercle angle and suprascapula armed with spine. Gill opening very wide. Branchiostegals 8. Air bladder small, pyriform. Dorsal without spines, rays 17. Anal rays 9 or 10. Ventral with spine and 6 rays.

Dorsals continuous, with 2 to 8 weak spines. Anal with 4 spines and many soft rays, much longer than dorsal. Caudal usually forked. Ventrals thoracic, with 1 spine and 7 to 10 rays.

Fishes of the deep seas, usually red or black in color. A number of related extinct forms are known from the upper Cretaceous and later formations.

528

Anoplogaster cornutus (Valenciennes)

Hoplostethus cornutus Valenciennes,
Hist. nat. Poiss., vol. 9, p. 470, 1833
(type locality, from stomach of a
"Sequin" [Eutania] harpooned in 26° S.
Lat. [tropical Atlantic]).

Anoplogaster cornutus Günther, Cat.
Fish. Brit. Mus., vol. 1, p. 12, 1859
(compiled). — Lütken, Overs. Vidensk.
Selsk. Forh. Kjöbenhavn, 1877, p. 181, pl.
5, figs. 4-7 (lat. 25° N., long. 31° W.). —
Günther, Rep. Voy. Challenger, vol. 22, p.
25, 1887 (compiled). — (Goode and Bean,
Oceanic Ichth., p. 184, text fig. (front view),
pl. 54, fig. 203 (Lat. 39° 18' 30" N., Long. 68° 24'
W.)) — Jordan and Evermann, Bull. U.
S. Nat. Mus., no. 47, pt. 1, p. 840, 1896
(copied). — Garman, Mem. Mus. Comp.
Zool., vol. 24, p. 383, 1899 (reference).
— Jordan, Evermann, Clark, Rep. U. S.
Comm. Fisher., 1928 (1930), pt. 2, p. 233 (reference).

— Parr, Bull. Bingham Oceanogr.
* Coll., vol. 3, art. 6, p. 10, fig. 5,
December 1933 (lat. $32^{\circ}19'N$, long.
 $64^{\circ}33'W$, in 8000 feet).

opposite eye center, 3 rows on cheek
to preopercle ridge and flange
broadly naked.

D. 7, 9 or 10, first spine $3\frac{1}{2}$ in
head, first ray 2; A. III, 7 or 8, third
spine $4\frac{3}{5}$; least depth of caudal
peduncle 3; pectoral $1\frac{1}{10}$; ventral
 $1\frac{1}{3}$; caudal about long as head,
upper lobe ends in short filament.

Rosy. Iris yellowish or red. Four or
5 longitudinal yellow or golden bands
on head and body, widest on back
and flanks. Fins rosy or pink.
Dorsals above with 2 longitudinal
violaceous lines submarginally, anal
with median longitudinal yellow
band. Length 164 mm. (Bleeker.)

East Indies.

530

Depth $1\frac{3}{4}$; head $2\frac{1}{2}$, width $1\frac{3}{4}$.

Snout $3\frac{1}{3}$ in head from snout tip; eat 4, equals snout, $1\frac{1}{2}$ in interorbital; maxillary very oblique, extends $\frac{3}{5}$ eye diameter behind eye, expansion $2\frac{1}{2}$ in eye, length $1\frac{1}{5}$ in head, from snout tip; teeth minute, villiform, in narrow band above, lower larger uniserial, larger and several scattered along much more enlarged forwards each side; interorbital $2\frac{4}{5}$, broad, convex, low. Gill rakers $3+9$, lanceolate, $1\frac{2}{5}$ in eye; gill filaments $\frac{4}{5}$ gill rakers.

Scales 66 close along and above lateral line to caudal base

8456. Cebu market. March 28, 1907. 996

Length 228 mm.

A 1535. Soc Pan Island. January 7, 1910.

Length 230 mm.

A 420. Jolo market. March 7, 1908.

Length 273 mm.

U.S. N.M.

72196, Cagayanillo. R. C. Mac Gregor.

Length 120 mm.

71593 to 71595 U.S. N.M. Naha, Okinawa.

Albatross Collection 1906. Length 222 to 230 mm.

52521 U.S. N.M. Apia, Samoa. Bureau of Fisheries. Two examples, 68 to 127 mm.

51111 U.S. N.M. Hawaiian Islands.

Bureau of Fisheries. Length 193 mm.

and 6 more on latter; pores 20 in lateral line; 12 scales above lateral line, 25 below, 24 predorsal opposite hind eye edge, about 7 posterior to hind end of maxillary. Scales each as 3 or 4 widely divergent triangular spines.

D. 17, I, fifth ray $3\frac{3}{4}$ in total head length; A. I, 8, second branched ray $3\frac{1}{2}$; caudal (damaged); least depth of caudal peduncle 4; pectoral $1\frac{1}{10}$, rays 16; ventral rays 7, fin 2 in head.

Uniform brown. Iris gray brown. Blackish brown spot before each ventral origin, another median spot on edge of postventral region, another before and one behind anal fin base.

North Atlantic.

Hepatus grammoptilus (Richardson).

Acanthurus grammoptilus Richardson, Ann.
Mag. Nat. Hist. London, vol. 11, 1842, p. 176.

Port Essington, Queensland. — Günther, Cat.
Fish. Brit. Mus., vol. 3, 1861, p. 335 (types).

Xenthis grammoptilus McCulloch, Mem.

Queensland Mus., vol. 6, 1918, p. 9, plate 28
(Clarence River).

U. S. N. M., no. 33559. Lat. $39^{\circ}18'30''N$,
Long. $68^{\circ}24''W$. Albatross Collection.
Length 55? mm (caudal broken).

944

(Mauritius and Hawaiian Islands). —

Sauvage, Hist. nat. Madagascar, 1891, p. 337.

Hepatus dussumieri Seale and Bean, Proc. U.

S. Nat. Mus., vol. 33, 1907, p. 247 (Zamboanga).

— Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p.
5-10 (Okinawa, Riu Kiu). — Tanaka, Fish.

Japan, vol. 23, 1916, p. 408, plate 111, fig. 334
(Okinawa and Sagami Sea).

Acanthurus nummifer Valenciennes, Hist. nat.

Pois., vol. 10, 1835, p. 150. Waigiu (also type of

Acanthurus bariene Lesson). — Günther, Cat.

Fish. Brit. Mus., vol. 3, 1861, p. 338 (copied).

Acanthurus lineolatus (non Valenciennes) Plunzinger,

Verh. zool. bot. Ges. Wien, band 21, 1871, p. 511

(Koseir, Red Sea).

Hepatus xanthopterus (non Valenciennes) Jordan

and Evermann, Bull. U. S. Fish Comm., vol.

23, pt. 1, 1903 (1905), p. 389 (Hondulu).

533

Family Immoctridae

Body deep, compressed, ovoid in contour. Head large, prominent. Snout rounded, projects. Eyes large. Maxillary with single supplemental bone. Mouth large, inferior, cleft little inclined. Bands of teeth in jaws and on palatines, present or absent on vomer. Opercle entire. Preopercle without large projecting spine at angle. No pseudobranchiae. Air bladder present. Pyloric coeca large, few. Head with large bony ridges bordering mucous channels. Bony scutes on median line of belly large and well beeled. First 4 pairs of ribs absent. Scales large, bony, more or less beeled, spinose, firmly united and form coat of mail.

Dorsals 2, spines 5 or 6, large, well spaced, strong. Anal spines 1 or 2. Caudal moderately forked or emarginate. Pectorals large. Ventral thoracic, with long, strong spine and 3 minute soft rays.

Two genera, ~~one genus~~, in the Indo Pacific. Unlike all other fishes, perhaps more suggestive of a pine cone than any other object. "I have never seen the equal of it" (Houttuyn).

Analysis of Genera

a. Small patch of teeth on vomer; suborbital very narrow; luminous organ each side of mandible. Cleidopus.

a. No teeth on vomer; suborbital deep as eye; no luminous organs on mandible. Monocentris.

4 above, 10 or 11 below, 14 or 15 predorsal forward opposite head center, 3 rows on cheek to preopercle ridge and flange broadly naked. Suprascapula scale entire, venulose, also row of scales obliquely forward as well as marginal occipital scales. Scales with 7 basal radiating striae; 58 to 70 minute feeble apical denticles, with about 16 transverse series of basal elements; circuli very fine.

D. 7, 9, ±, fourth spine $2\frac{3}{4}$ to $2\frac{7}{8}$ in head, eighth ray 2 to $2\frac{4}{10}$; A. III, 7, ±, third spine $3\frac{1}{8}$ to $3\frac{3}{4}$, first ray $2\frac{1}{4}$ to $2\frac{3}{5}$; caudal $1\frac{1}{8}$? to $1\frac{1}{5}$?, well forked, lower lobe shorter; least depth of caudal peduncle $2\frac{4}{15}$ to $3\frac{1}{10}$; pectoral $1\frac{1}{4}$; ventral $1\frac{1}{5}$ to $1\frac{2}{15}$.

Backs down to median axial line

Genus Cleidopus De Vis

Cleidopus De Vis, Proc. Linn. Soc. New South Wales, vol. 7, p. 367, 1882. (Type Cleidopus gloria-maris De Vis, monotypic.)

Small patch of teeth on vomer.
A luminous disk like organ on each side of mandible. Suborbital very narrow, slender.

One species in eastern Australia.

Cleidopus gloria-maris de Vis

Cleidopus gloria-maris de Vis, Proc. Linn. Soc. New South Wales, vol. 7, p. 368, 1882 (type locality, Brisbane River, Long. 8").

— McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 139, July 7, 1925 (reference).

— McCulloch, Rec. Austral. Mus., vol. 13, no. 4, p. 124, pl. 23, fig. 1, April 12, 1921 (New South Wales coast and Fremantle). — McCulloch, Fishes New South Wales, ed. 2, p. 34, 1927; Austral. Mus. Mem., vol. 5, pt. 1, p. 133, June 29, 1929 (reference). (pl. 12, fig. 121a)

Monocentris gloria-maris Gilby, Proc. Linn. Soc. New South Wales, vol. 24, ^{pt. 1,} p. 163, 1899 (type of Cleidopus gloria-maris; Port Jackson; Port Stephens).

— Waite, Mem. Austral. Mus., vol. 4, pt. 1, p. 67, pl. 8, figs. 1-2, 1899 (off Narrabine, Broken Head, Manning River, Manning Bight).

Cleidopus gloria-maris occidentalis Whitley, Austral. Zoologist, vol. 6, pt. 4, p. 314, February 13, 1931 (type locality, Fremantle).

Monocentris japonicus (not Houttuyn) Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 4, p. 510,

hooker green; orange brown spot on central posterior portion of each scale, form as 4 rows above lateral line, more diffuse below lateral line and on hind part of body, giving rise to 4 broad cross bars, ^{grounded in dusky} of which 2 on caudal peduncle; on lower portion of body some of scales tipped with reddish; breast and belly dusky; lower sides dusky and silvery in blotches. Head dusky green; orange stripe from eye across preorbital to premaxillary, diffusing across nose; interorbital region with orange brown spots; bright yellow blotch behind eye,

Depth $1\frac{1}{2}$; head $2\frac{3}{5}$, width $1\frac{7}{8}$. Snout to eye $4\frac{7}{8}$ in head; eye $4\frac{1}{2}$ to 5 , ~~about 3 to 4~~ greater than snout to $1\frac{2}{5}$ in snout, $1\frac{2}{5}$ ~~about 1~~ in interorbital; orbit 3 to $3\frac{1}{4}$ in head, greater than snout or interorbital; maxillary reaches opposite hind eye edge or hind orbital edge, length 2 to $2\frac{1}{5}$ in head; interorbital $3\frac{3}{4}$. Lower gill rakers 12; about $\frac{2}{5}$ of eye.

Scales 14 or 15 in lateral line, 2 above, 5 below or 4 below to anal origin; abdominal scutes 5. Soft dorsal and anal sheaths of 3 pairs of scales. Maxillary expansion closely studded with short, stout, conical spines.

Rosy blotch below eye. Inside gill opening bright orange. Dorsal edge narrowly, together with narrow longitudinal band beginning at base of first spine, continuing to tip of last ray and similar band across anal from base of first spine sulphur green. Caudal peduncle orange red. Paired fins pale orange.

D. V to VII, I or II, 11 or 12,
 second spine $2\frac{1}{3}$ in. head, third
 branched ray 2; A. II, 11 or 12,
 third branched ray $1\frac{3}{4}$; caudal
 $1\frac{1}{3}$, little emarginate behind;
 least depth of caudal peduncle
 $2\frac{7}{8}$; pectoral $1\frac{1}{4}$, rays I, 14;
 ventral spine $2\frac{1}{2}$ in combined
 head and body to caudal base.

Whitish, with golden gloss
 anteriorly, black skin visible
 between scales, especially on
 tail. Lips and chin black,
 naked space between mandibles
 with numerous broad, fleshy,
 white tentacles. Luminous
 mandibular disks yellow.
 Bony maxillary, skin behind
 and beneath, white. Larger
 gill rakers tipped dull blue.

6302. Manila market. June 13, 1908.

Length 238 mm.

6753. Manila market. April 17, 1909.

Length 278 mm.

1 example. Port Janelo, Luzon. July 12, 1908. Length 248 mm., tail damaged.

1 example. No data. Length 250 mm.

56099 U.S.N.M., Van Fabian, Bureau of Fisheries (No. 3572). Length 208 mm.

27604 A.N.S.P., Padang, Sumatra.

^vHarrison and ^vHiller. Length 227 mm. When fresh in arrack faced pale brownish, washed with silvery and tinged red above. Pale yellowish longitudinal band along each series of scales on lower surface of body. Similar bands on upper surface but becoming reddish. Deep vermilion blotch at beginning of lateral line, with an indistinct greenish blotch around its lower edge.

A.C.

H.L.

540

Length 230 mm. (Ogilby, Waite,
Mc Culloch).

Western Australia, Queensland,
New South Wales. Whitley has
separated the Western Australian
form as Cleidopus gloriamaris
occidentalis with 13 or 14 scutes
between the shoulder and base
of tail, compared with 14 to 16
for the east coast form. "The
dorsal spines of western specimens
are smaller than those of the
eastern ones."

brown, well contrasted from lower or whitish half of body and all over shot with silvery white. Back also with variable pale areas. Iris yellowish brown. Fins pale brownish, lower ones paler.

Ceylon, India, Andamans, Siam, East Indies, Philippines, Indo China, China, Queensland, Melanesia. Known by its deep body, canines in front of both jaws, ^{and} dorsal spines not higher than rays. There seems but little doubt but that my specimens are Synagris furcatus Günther, though Day says the Dentex furcatus Valenciennes "has an elongated body and the caudal lobes very prolonged", hardly definite diagnostic characters. I also place Dentex marginatus ^{Valenciennes} and Dentex taeniopterus Valenciennes as synonyms.

541

Genus Monocentris Schneider

Monocentris Schneider, Syst. Ichth. Bloch, p. 100, 1801. (Type Monocentris carinata Schneider, monotypic.)

Lepisacanthus Lacépède, Hist. Nat. Poiss., vol. 3, p. 320, 1802. (Type Gasterosteus japonicus Houttun, monotypic.)

↑ Ericius Tilesius, Mém. Soc. Imp. Nat. Moscou, vol. 2, p. 243, 1809. (Type ~~Gasterosteus~~ Monocentris carinata Schneider, virtually orthotypic.)

jaw and on palatines, none on vomer. Suborbitals, ^{rather deep or equal to eye,} with radiating ridges. Gill rakers long, slender. Branchiostegals 8. Abdomen beaked from between ventrals to anus. ^{no} Luminous organ each side of symphysis of lower jaw. Dorsal spines isolated, only joined basally. Soft dorsal moderate. Anal moderate, opposite soft dorsal. Pectoral rather low. Ventral depressible in infero-lateral groove.

541

Genus Monocentris Schneider

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Lepisacanthus Lacépède, Hist. nat. Poiss., vol. 3, p. 320, 1802. (Type Gasterosteus japonicus Houttuyn, monotypic.)

Body deeply ovate, back arched. Head deep. Snout obtuse, short, blunt, protruded beyond mouth. Eyes anterior. Mouth moderate, little inclined. Teeth villiform, in bands in jaws and on palatines, none on vomer. Suborbitals ^{rather deep or equal to eye} with radiating ridges. Gill rakers long, slender. Branchiostegals 8. Abdomen beaked from between ventrals to anus. ^{no} Luminous organ each side of symphysis of lower jaw. Dorsal spines isolated, only joined basally. Soft dorsal moderate. Anal moderate, opposite soft dorsal. Pectoral rather low. Ventral depressible in infero-lateral groove.

GENERAL MOTORS CORPORATION
DETROIT, MICHIGAN

March 23, 1934

→ monotypic.

Body deep
Head deep.
blunt, prot
Eyes anterior
inclined. Te
jaws and on
Suborbitals
rakers long,
P. 10. T. 10.

542

Monocentris japonicus (Houttuyn)

Gasterosteus japonicus Houttuyn,
Verh. Holland. Maatsch. Wet.
Haarlem, vol. 20, pt. 2, p. 329,
pl. 2, 1782 (type locality, Japan
[= Nagasaki]). — Bonnaterre,
Tabl. Ichth., p. 136, 1788 (Japan).
— Gmelin, Syst. Nat. Linn., vol.
1, p. 1325, 1788 (Japan). —
Walbaum, Artedi Pisc., vol. 3, p.
450, 1792 (copied). — Forster,
Fauna Indica, p. 15, 1795. —
Schneider, Syst. Ichth. Bloch,
p. 123, 1801 (copied). — Jordan
and Snyder, Proc. U. S. Nat. Mus.,
vol. 23, 1901, p. 747 (note).

Depth $3\frac{3}{4}$ in total; head $3\frac{3}{4}$.
Snout short, obtuse, upper jaw
overlapping; eye 3 in head;
maxillary reaches behind eye;
barbels reach pectoral base;
teeth in very broad velvet like
bands in jaws and band on
palatines and pterygoids,
besides narrow band on
vomer; interorbital 4; preopercle
edge indistinctly crenulated.

Scales 50 in lateral line;
on body rather oblique and
irregular. Head largely scaly.

D. V, 30, fifth spine longest
and $\frac{1}{2}$ of first soft ray;
A. III, 16, like soft dorsal but
shorter and lower; caudal
deeply forked, pointed lobes equal,
4 in rest of fish; pectoral short;

~~Monocentris japonicus (Houttuyn)~~

~~Gasterosteus japonicus Houttuyn,
Verh. Holland. Maatsch. Wet. Haarlem,
vol. 20, pt. 2, p. 329, pl. 2, 1782
(type locality, Nagasaki).~~

Lepisacanthus japonicus Lacépède,
Hist. nat. Poiss., vol. 3, p. 321,
1802 (on Houttuyn).

Monocentris japonicus Cuvier, Hist. nat.
Poiss., vol. 4, p. 461, pl. 97, 1829 (seas
of Japan).

— Schlegel, Fauna Japonica, Poiss.,
pts. 2-4, p. 50, pl. 22, fig. 1, 1843 (Nagasaki Bay).

— Bleeker, Naturk. Tijds. Ned. Indië, vol. 9, p. 492, 1855 (Batjan).

— Brevoort, Narr. Exped. Japan, Perry,
p. 262, ^{pl. 6, fig. 6,} 1856 (Simoda).

— Günther, Cat. Fish. Brit. Mus., vol.
1, p. 9, 1859 (China Seas). — Bleeker,
Nederl. Tijdsch. Dierk., vol. 4, p. 136,
1873 (1874) (reference); Atlas Ichth.
Ind. Néerl., vol. 9, pl. (2) 356, fig. 4,
1877. — Castelnau, Proc. Linn. Soc. New
South Wales, vol. 3, p. (349) 365, 1878

(Port Jackson). — Hilgendorf, Sitzs.
Ber. Naturf. Fr. Berlin, p. 22, 1879
(anatomy).

~~Maclean, Proc. Linn. Soc. New South Wales,
vol. 5, pt. 4, p. 115, 1880 (Port Jackson).~~

— Steindachner and Döderlein, Dansk. Akad.
Wiss. Wien, vol. 47, pt. 1, p. 217, 1883
(Enoshima, Nagasaki, Kamagawa, Philippines)

— Nyström, Bih. Kon. Svensk. Vet.
Akad. Handl. Stockholm, vol. 13, afd. 4,
no. 4, p. 4, 1887 (Nagasaki). — Elera,

Cat. Fauna Filipinas, vol. 1, p. 454, 1895
(Luzon, Manila, Bataan). — Ulecek,

Ann. Mag. Nat. Hist., ser. 7, vol. 2, p. 151,
1898 (Gulf of Martaban, 67 fathoms); Descript.
Cat. Fish. Indian Mus., p. 32, 1899 (Gulf
of Martaban, 67 fathoms). — Jordan and

Snyder, Annot. Zool. Jap., vol. 3, p. 62,
1901 (Nagasaki, Shimoda, Kaminoseki,
Yokohama, Enoshima, Kanagawa). —

Jordan and Fowler, Proc. U. S. Nat. Mus.,
vol. 26, p. 19, 1902 (Tokyo, Misaki,
Wakanoura, Sagami, Suruga, Nagasaki,
Kaga). — Franz, Abhand. Kon. Bayer.

Akad. Wiss., vol. 4, Suppl. Band 1, p. 32,
pl. 5, fig. 40, 1910 (Sagami Bay, Fukuura,

terminally and posteriorly. Other fins with very slight vermilion shades.

A 1521, 9953. Loc Can Island.

January 7, 1910. Length 175 to 227 mm.

34798 U. S. N. M. Tahiti. Dr. W. H.

Jones. Length 151 mm. As Lethrinus
minutus.

Djishi, Enoshima). — Snyder, Proc. W. S. Nat. Mus., vol. 42, p. 410, 1912 (Misaki). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, p. 118, 1913 (Tokyo to Nagasaki). — Weber, Siboga Exped., vol. 57, Fische, p. 188, 1913 (Timor Sea). — Izuka and Matsuura, Cat. Spec. Tokyo Mus., Vertebr., p. 161, 1920, (Misaki). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 209, June 27, 1925 (Misaki). — Barnard, Ann. South African Mus., vol. 21, p. 360, ^{pl. 14, fig. 6,} 1925 (Mossel Bay, Natal, Delagoa ^{pt. 1,} Bay, 20 to 100 fathoms). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 77, p. 206, 1925 (Natal Bluff, 18 miles south east). — Weber and Beaufort, Fishes Indo Austral. Mus., vol. 5, p. 223, figs. 63-64, 1929 (Timor Sea, 216 meters). — Schmidt, Bull. Acad. Sci. U. S. S., p. 1138, 1930 (Tsuruga). — Chu, Biol. Bull. St. John's Univ., no. 1, p. 96, January 1931 (Saddle Island). — Schmidt, Trans. Pac. Comm. Acad. Sci. U. S. S. R., vol. 2, p. 38, 1931 (Nagasaki).

Sciaena japonica (cataphracta)
Thunberg, Nov. Act. Sci. Suec., vol.
 11, p. 102, pl. 3, 1790 (type locality,
 Nagasaki).

Monocentris cataphracta Schneider,
 Syst. Ichth. Bloch, pl. 24, 1801 (no locality).
Bleeker, Verslag. Kon. Akad. Wet.
 Amsterdam, vol. 1, p. 5, 1853
 (Kaminoseki); Verhand. Kon. Akad.
 Wet. Amsterdam, vol. 1, Jap., p. 5,
 1854; Verhand. Batavia. Genoot. Nat. Ichth.
 Jap.), vol. 26, p. 4, 1857 (Nagasaki).

Monocentris carinata Schneider, Syst.
 Ichth. Bloch, p. 100, 1801 (type locality,
 Japan).

Monocentris cataphractus Bleeker, Act.
 Soc. Sci. Ind. Néerl., vol. 3, no. 3, p.
 2, 1857-58 (Kioesio), p. 5 (Japan).

(95a)

6007. Zamboanga market. May 27,
1908. Length 300 mm. Dusky olive
gray above, white below. Inside
mouth scarlet. Opercle without
scarlet blotch. Dorsal mottled with
vermilion and other fins with slight
vermilion shades.

A 965. Binang Unang Island, Gulf
of Tomini, Celebes, Dutch East Indies.
November 17, 1909. Length 298 mm.

A 949. Dodepo and Pasejogo Islands,
Gulf of Tomini, Celebes. November 16, 1909.
Length 283 mm.

A 1493. ~~WAWA~~ Kait Point, Libani
Bay, Celebes. December 29, 1909. Length
230 mm.

Depth $1\frac{1}{2}$ to $1\frac{4}{5}$; head $2\frac{1}{5}$ to $2\frac{3}{4}$, width $1\frac{3}{4}$ to 2. Snout $3\frac{7}{8}$ to 4 in head; eye $3\frac{1}{5}$ to $4\frac{3}{4}$, -greater than snout in young to $1\frac{1}{5}$ in snout with age, $1\frac{2}{5}$ to 2 in interorbital; maxillary reaches opposite or slightly beyond hind eye edge, length from front end $1\frac{7}{8}$ to 2 in head; interorbital $2\frac{1}{4}$ to $2\frac{4}{5}$, convexly elevated. Gill rakers 8 + 13 or 14, lanceolate, $1\frac{1}{3}$ in eye; gill filaments $\frac{3}{4}$ gill rakers.

Bony bucklers 14 or 15 in lateral line; 7 transversely, 5 predorsal. Longitudinal keels much more prominent in young, spines also better developed.

D. V or VI, 11, I or 12, I, second spine $1\frac{1}{2}$ to $1\frac{3}{5}$ in head, fourth ray $2\frac{2}{5}$ to $3\frac{1}{2}$; A. I, 9, I or I, 10, I,

853

Ctenochaetus strigosus (Bennett).

Acanthurus strigosus Bennett, Zool. Journ.,
vol. 4, 1828, p. 41. Hawaiian Islands. — Valenciennes,
Hist. Nat. Poiss., tome 10, 1835, p. 179 (New Guinea).
— Bleeker, Nat. Tijds. Ned. Indië, deel 4, 1853,
p. 264 (Cauer); deel 6, 1854, p. 313 (Laramtuba,
Flores Island); deel 8, 1855, p. 296 (Ternate),
p. 306 (Ratoe Island); deel 9, 1855, p. 106
(Sabu, Halmahera), p. 234 (Manado, Celebes);
vol. 10, 1856, p. 360 (Ternate); deel 11, 1856, p. 81
(Kealong, Java), p. 95 (Banda); deel 12, 1856, p. 230
(Batu), p. 293 (Boeking, Bali); deel 13, 1857, p.
372 (Sungi), p. 478 (Karangbollong); deel 15,
1858, p. 159 (Prigi), p. 200 (Goram); deel 17,
1858-59, p. 130 (Atapoepe, Timor); deel 22,
1860, p. 113 (Buru). — Bleeker, Act. Soc. Ind.
Néerl., vol. 1, no. 3, 1856, p. 4 (Manado); vol. 1, no. 5,
1856, p. 6 (Ambonia); vol. 2, no. 7, 1857, p. 5 (Ambonia);
vol. 3, no. 4, 1857-58, p. 3 (Tomawambo); vol. 3, no. 9,
1857-58, p. 5 (Priaman). — Günther, Cat. Fish.

third branched ray $2\frac{1}{3}$ to $2\frac{1}{2}$;
caudal $1\frac{4}{5}$ to 2, forked, lobes
rounded; least depth of caudal
peduncle 4 to 5; pectoral $1\frac{1}{2}$ to $1\frac{3}{4}$;
ventral $1\frac{1}{5}$ to $1\frac{1}{4}$.

Brown over most of body, each
scale with black, sharply defined
narrow line, forming reticulated
pattern. Yellowish tints sometimes
on cheeks and opercle. Fins all
pale or light brown to dull
yellowish.

Batal, India, East Indies,
Philippines, China, Riu Kiu, Japan.

Genus Ctenochaetus Gill.

854

Ctenochaetus Gill, Proc. U. S. Nat. Mus., vol.

7, 1884 (1885), p. 279. Type Acanthurus

strigosus Bennett, orthotypic.

Teeth long, slender, movable, bristle
like, with expanded tips strongly
serrulated. Dorsal spines 8 or 9.

Coloration dark or sombre.

549

U. S. N. M., No. 34438. Japan.
J. C. Brevoort. Length 53 mm.

U. S. N. M., No. 51383. Suruga
Bay, Japan. Albatross Collection
(5142). Length 132 to 143 mm.
Two examples.

U. S. N. M., No. 71932. Misaki,
Yagami Bay, Japan. Albatross
Collection. 1905. Length 74 to 124
mm. Five examples.

U. S. N. M., No. 57633. Japan.
P. L. Jouy. Length 110 to 164 mm.
Six examples.

dorsal spines 4 or 5;

add. Body deep, subrhomboid; soft dorsal and anal high anteriorly; dorsal caudal truncate. Zebraxma

aa. nasinae. Tail armed with firmly immovable bony bucklers, each beaked or with rigid spine.

e. Caudal bucklers 2.

haso

cc. Caudal bucklers more than 2.

Prionurus